

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
Water Resources

WATER QUALITY REGULATIONS



Promulgated: AUGUST 6, 1997
Amended March 25, 1999
Amended June 23, 2000

Regulation EVM 112-88.97-1

AUTHORITY: These regulations are adopted in accordance with Chapter 42-35 pursuant to Chapters 46-12 and 42-17.1 of the Rhode Island General Laws of 1956, as amended

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Rule 1. PURPOSE

It is the purpose of these regulations to establish water quality standards for the state's surface waters. These standards are intended to restore, preserve and enhance the physical, chemical and biological integrity of the waters of the State, to maintain existing water uses and to serve the purposes of the Clean Water Act and Rhode Island General Laws Chapter 46-12. These standards provide for the protection of the surface waters from pollutants so that the waters shall, where attainable, be fishable and swimmable, be available for all designated uses, taking into consideration their use and value for public water supplies, propagation of fish and wildlife, recreational purposes, and also taking into consideration their use and value for navigation, and thus assure protection of the public health, safety, welfare, a healthy economy and the environment.

Rule 2. LEGAL AUTHORITY

The authority for these regulations is vested in the Director by Chapter 46-12, Water Pollution, Chapter 42-17.1, Environmental Management and Chapter 42-17.6, Administrative Penalties For Environmental Violations of the General Laws of Rhode Island, as amended. These rules and regulations are further promulgated pursuant to the requirements and provisions of all chapters of the General Laws of Rhode Island relating to the duties and responsibilities of the Director for the waters of the state, and in accordance with the requirements of Chapter 42-35, Administrative Procedures Act.

Rule 3. - SUPERSEDED RULES

Upon adoption, these rules and regulations will supersede "Water Quality Regulations for Water Pollution Control" dated September 1988.

Rule 4. - LIBERAL APPLICATION

The terms and provisions of these rules and regulations shall be liberally construed to allow the Department to effectuate the purposes of state law.

Rule 5. - SEVERABILITY

If any provision of these rules and regulations or the application thereof to any person or circumstance is held invalid by a court of competent jurisdiction, the remainder of the rules and regulations shall not be affected thereby. The invalidity of any rule or rules or parts of any rule or rules shall not affect the validity of the remainder of these rules and regulations.

Rule 6. - APPLICATION OF THESE REGULATIONS

A. Nothing in these rules and regulations shall be deemed to interfere with the Director's power and duty to issue an immediate order pursuant to section 46-12-10 of the General Laws of Rhode Island.

B. These regulations apply to all waters of the State, all systems or means of wastewater treatment, including sewers, all discharges into surface waters, all activities which will likely impact water quality and/or activities that will likely cause or contribute to flow alterations. These regulations shall also apply to those activities regulated by the federal government, other state agencies, programs within the Department and/or local governmental entities. All departmental regulations should be construed to be consistent and/or complementary and any perceived conflicts are unintentional. Should a perceived conflict arise between or among these regulations and the requirements imposed by the other departmental regulations or other governmental entities, the most stringent requirement shall govern.

Rule 7. - DEFINITIONS

For the purposes of these regulations, the following terms shall have the following meanings:

"Acute toxicity" means lethal or sublethal severe adverse effect(s) to an organism when exposed to a toxic pollutant(s) for a relatively short period of time. In aquatic toxicity tests, an effect observed in 96 hours or less is typically considered acute.

"Administrator" means the administrator of the United States Environmental Protection Agency or any subordinate or subordinates to whom the Administrator delegates the powers and duties vested in that office.

"Applicable standards and limitations" means all state, interstate and federal standards and limitations to which a discharge or activity is subject under the Clean Water Act or any State Acts including but not limited to effluent limitations, water quality standards, standards of performance, toxic effluent standards or prohibitions, best management practices, and pretreatment standards under Sections 301, 302, 303, 304, 306, 307, 308, 403, and 405 of the Clean Water Act.

"Applicant" means a person who applies for any approvals for any discharge, activities, projects, or facilities in accordance with the requirements of these regulations.

"Application" means all forms, documents, and other information required by the Department to apply for a permit, order, certificate, or other approval from the Department in accordance with the requirements of these regulations.

"Approval" means an authorization, Order of Approval, permit, certification, license or equivalent determination issued pursuant to regulations promulgated by the Department.

"Aquaculture facility" means a defined managed water area or facility for the maintenance or production of harvestable freshwater, estuarine or marine plants and/or animals. Defined managed water area as used in this definition, means the portions of the waters of the state within which the permittee or permit applicant confines and/or plans to confine the cultivated species, using a method or plan of operation (including but not limited to, physical confinement) which, on the basis of reliable scientific evidence, is expected to ensure that specific individual organisms comprising an aquaculture crop will enjoy increased growth and be harvestable within a defined geographical area.

"Aquatic Research Related Activities" means an activity in which research is conducted to evaluate the effect of various factors on the health, growth, or reproduction of aquatic organisms.

"Best Management Practices (BMPs)" means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of and impacts upon waters of the State. BMPs also include treatment requirements, operating procedures, and practices to control site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

"Best Professional Judgment (BPJ)" means a determination, based on best engineering and/or scientific practices and best management practices, involving any pollutant, combination of pollutants or practice(s), on a case by case basis, which is determined by the Director to be necessary to carry out the provisions of the Clean Water Act and any applicable chapters of the General Laws of Rhode Island. BPJ can be used to set Best Available Technology Economically Achievable, Best Conventional Pollutant Control Technology, Best Practicable Control Currently Available or Best Management Practices limitations pursuant to the Clean Water Act either in the absence of an applicable promulgated effluent guideline or where promulgated effluent limitation guidelines only apply to certain aspects of the discharge's operation or to certain pollutants.

"Bioassay" means a toxicity testing procedure using aquatic organisms to determine the concentration or amount of a toxic pollutant(s) causing a specified response in the test organisms under stated test conditions.

"Brackish water" means those waters of the state in which the natural level of salinity is greater than 1 (one) part per thousand but less than 10 (ten) parts per thousand, 95 percent or more of the time.

"CFR" means the Code of Federal Regulations.

"Chronic toxicity" means lethal or sublethal adverse effect(s) to an organism or its progeny, based on various physiological measurements including but not limited to growth, survival, or reproductive success when exposed to a toxic pollutant(s) for a relatively long period of time. The methods commonly used to estimate chronic effects involve exposures of typically seven (7) days or less.

"Clean Water Act (CWA)" refers to the Federal Water Pollution Control Act (33 U.S.C. § 1251) et seq. and all amendments thereto.

"Combined Sewer" means a sewer which serves as a sanitary sewer and a storm sewer.

"Combined Sewer Overflow (CSO)" means flow from a combined sewer that is discharged into a receiving water without going to a treatment works. A CSO is distinguished from bypasses which are diversions of waste streams from any portion of a treatment works.

"Contiguous zone" means the entire zone established by the United States under Article 24 of the Convention on the Territorial Sea and the Contiguous Zone.

"Controlled relay" means the transplant of shellfish from certain Class SB, SB1 and/or SC waters to Class SA waters suitable for shellfish harvesting under the coordination and authority of the RIDEM for the purpose of natural purification and controlled harvest.

"Cultural eutrophication" means the human-induced acceleration of primary productivity in a surface waterbody resulting in nuisance conditions of algal blooms and/or dense macrophytes.

"Department" or "Departmental" or "DEM" or "RIDEM" or "Director" means the Rhode Island Department of Environmental Management or the director of the Department of Environmental Management or any designee to whom the Director delegates the powers and duties vested in that office.

"Depuration" means the artificial holding of shellfish for purification purposes.

"Designated uses" are those uses specified in water quality standards for each waterbody or segment whether or not they are being attained. In no case shall assimilation or transport of pollutants be considered a designated use.

"Discharge" means to cause or allow the addition or release of any pollutants to the waters of the State or placement of any pollutant where it is likely to enter the waters of the State and includes but is not limited to surface water runoff, spilling, depositing, placing, leaking, pumping, pouring, emitting, emptying, or dumping. This definition includes additions of pollutants into waters of the State from both point and nonpoint sources. This term does not include an addition of pollutants by an indirect discharge.

"Discharger" means any person who causes, or allows, any discharge.

"Dredging" means the excavation of sediments from beneath surface waters by mechanical or hydraulic means.

"Effluent limitations" means any restriction imposed by the Director on quantities, discharge rates and concentrations of pollutants which are discharged from point sources into surface waters of the state or the contiguous zone.

"Effluent limitation guidelines" means a regulation published by the Administrator under Section 304(b) of the Clean Water Act to adopt or revise effluent limitations.

"Effluent limited waters" means any segment of a surface waterbody where the water quality currently meets or is expected to meet applicable water quality standards after the application of the technology-based effluent limitations required by Sections 301(b) and 306 of the Act.

"EPA" means the United States Environmental Protection Agency.

"Existing use" means those designated uses and any other uses that do not impair the designated uses and that are actually attained in a waterbody on or after November 28, 1975; except that in no case shall assimilation or transport of pollutants be considered an existing use.

"Facility" means any building, structure and operation, including land or appurtenances thereto, on one contiguous site.

"Filling" means to place dirt, soil, stones, gravel, sand, sediment, tree stumps, brush, leaves, solid waste, debris, garbage, trash, pollutants, or any other material, substance, or structure, either foreign or related, on or in any waters of the state or in such a way as to alter the natural character, function or value of any waters of the state.

"Fish and Wildlife" means birds, fish, shellfish, mammals and all other classes of wild aquatic and land organisms and all types of vegetation upon which they are dependent, including all indigenous species.

"Flow Alteration" means the withdrawal of water from a surface water, either directly or indirectly, or the alteration of the normal flow patterns of a surface water due to a project which diverts or holds the surface water.

"Freshwater" means those waters of the State in which the natural level of salinity is equal to or less than one (1) part per thousand, 95 percent or more of the time.

"Groundwater" means water found underground which completely fills the open spaces between particles of soil and within rock formations.

"Habitat" means the area which provides direct support for a given species, population or community. It includes all environmental features that comprise an area such as air, water, vegetation, soil, substrate and hydrologic characteristics.

"Hazardous substance" means any substance designated under 40 CFR Part 116 pursuant to Section 311 of the Clean Water Act.

"Hazardous waste" means any waste as defined in accordance with Section 23-19.1-4 of the General Laws of Rhode Island of 1956, as amended, and regulations adopted pursuant thereto.

"High quality waters" include all Class A and SA surface waters as well as other surface waters whose quality exceeds the minimum water quality criteria for any State aquatic life and/or human health criteria or water quality standards assigned to them; or whose quality and characteristics make them critical to the propagation or survival of important living natural resources; or those waters constituting a Special Resource Protection Water or an Outstanding National Resource Water.

"Indirect discharge" means any discharge into a treatment works.

"Kettlehole" means a pond or freshwater wetland in a depression in the earth's surface formed by the melting of a wholly or partially buried block of glacial ice.

"Lake, pond or reservoir" means any body of water, whether naturally occurring or created in whole or in part, excluding sedimentation control or stormwater retention/detention basins, unless constructed in waters of the State.

"Load allocation" means the portion of a receiving water's loading capacity that is attributed either to one of its nonpoint sources of pollution or to natural background sources.

"Loading Capacity" means the maximum amount of loading that a surface water can receive without violating water quality standards.

"Low quality waters" or "degraded" means any water whose quality falls below any of the criteria of rule 8.D. in accordance with Applicable Conditions of rule 8.E. and corresponding to its classification as designated in rule 8.C., as determined by the Director, shall be considered degraded for that particular criterion and in violation of its water quality standards and, therefore, unsatisfactory for any designated uses which the Director determines are affected by the particular criterion which is violated. Waters in their natural hydraulic condition may fail to meet their assigned water quality criteria from time to time due to natural causes, without necessitating the modification of assigned water quality standard. Such waters will not be considered to be violating their water quality standards if violations of criteria are due solely to naturally occurring conditions unrelated to human activities.

"Marina" means:

- a) a dock, pier, mooring, wharf, float or combination of such facilities that may accommodate five (5) or more recreational vessels as a commercial operation or in association with a club; or
- b) any dock, pier, mooring, wharf, float or combination of such facilities used as a commercial operation, aside from a) above, at which any vessel is serviced or maintained.

"Marine Sanitation Device (MSD)-Type I" means a marine toilet which, under prescribed test conditions, will produce an effluent that will not exceed a fecal coliform bacteria count of one thousand (1,000) parts per hundred (100) milliliters, and have no visible solids.

"Marine Sanitation Device (MSD)-Type II" means a marine toilet which, under prescribed test conditions, will produce an effluent that will not exceed a fecal coliform bacteria count of two hundred (200) parts per hundred (100) milliliters, and have suspended solids not greater than one hundred and fifty (150) milligrams per liter.

"Marine Sanitation Device (MSD)-Type III" means a marine toilet which is designed to prevent the discharge from the vessel of any treated or untreated sewage, or any waste derived from sewage.

"Marine toilet" means any toilet or receptacle for the containment of human wastes located on or within any vessel, as defined herein, not including a portable potty.

"Mixing Zone" means a limited area or volume in the immediate vicinity of a discharge where mixing occurs and the receiving surface water quality is not required to meet applicable standards or criteria, provided the minimum conditions described in rule 8.D.1.e and 8.D.1.f. of these regulations are attained.

"Municipality" means a quasi-governmental corporation, association or other public body created by or under State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes; a city, town, county, district, or a designated and approved management agency under Section 208 of the Clean Water Act.

"Natural background conditions" means all prevailing dynamic environmental conditions in a waterbody or segment thereof, other than those human-made or human-induced.

"New discharge" means any discharge which commenced subsequent to November 28, 1975, unless appropriate approvals had been granted.

"No Discharge Area/Zone" means an area of the surface waters of the state which has been requested by the Director of the Department of Environmental Management and declared by the United States Environmental Protection Agency, pursuant to Section 312 of the Clean Water Act, to be an area in which any discharge of sewage from vessels is prohibited.

"Non-contact cooling water" means water which is used to reduce temperature and does not come into direct contact with any raw material, intermediate product (other than heat), or finished product.

"Nonpoint Source" or "NPS" means any discharge of pollutants that does not meet the definition of Point Source in section 502.(14). of the Clean Water Act and these regulations. Such sources are diffuse, and often associated with land-use practices, and carry pollutants to the waters of the State, including but not limited to, non-channelized land runoff, drainage, or snowmelt; atmospheric deposition; precipitation; and seepage.

"Nutrient" means a chemical element or compound such as but not limited to nitrogen or phosphorous which is essential to and promotes the growth and development of marine or freshwater plant species.

"Outstanding National Resource Waters (ONRW)" means waters of National and State Parks, Wildlife Refuges, and other such waters designated as having special recreational or ecological value.

"Person" shall include an individual, trust, firm, joint stock company, corporation (including a quasi-governmental corporation), partnership, association, syndicate, municipality, municipal or state agency, fire district, club, non-profit agency or any subdivision, commission, department, bureau, agency or department of state or federal government (including any quasi-governmental corporation) or of any interstate body.

"Point source" means any discernible, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation or vessel, or other floating craft, from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture.

"Pollutant" means any dredged material, solid waste, incinerator residue, sewage, garbage, sewage sludge, sediment, filter backwash, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, industrial or municipal or agricultural waste or effluent, petroleum or petroleum products, including but not limited to oil; or any material which will likely alter the physical, chemical, biological or radiological characteristics and/or integrity of water.

"Pollution" means the human-made or human-induced alteration of the physical, chemical, biological or radiological characteristics and/or integrity of water.

"Pretreatment requirements" means any limitation or prohibition on quantities, quality, rates, and/or concentrations of pollutants directly or indirectly discharged into or otherwise introduced into a treatment works that are imposed by federal or state regulation or by the treatment works.

"Primary Contact Recreational Activities" means any recreational activities in which there is prolonged and intimate contact by the human body with the water, involving considerable risk of ingesting water, such as swimming, diving, water skiing and surfing.

"Priority pollutant" means those pollutants listed pursuant to Section 307(a)(1) of the Clean Water Act (see Appendix B).

"Public Drinking Water Supplier" means any city, town, district, or other municipal, public, private corporation or company, or non-profit entity authorized to engage in the collection and treatment of surface water for the purposes of distribution of drinking water in Rhode Island and whose source of drinking water is a surface water in Rhode Island.

"Public Drinking Water Supply" means the source of surface water for a public drinking water supplier.

"Rhode Island Pollutant Discharge Elimination System (RIPDES)" means the Rhode Island system for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing point source discharge permits and imposing and enforcing pretreatment requirements pursuant to Title 46, Chapter 12 of the General Laws of Rhode and the Clean Water Act.

"RIPDES Regulations" means the Rhode Island Pollutant Discharge Elimination System Regulations promulgated by the Department and any amendments thereto.

"Runoff" means water that drains from an area as surface flow.

"Sanitary sewer" shall mean a sewer which conveys sewage.

"Seawater (Saltwater)" means those waters of the State in which the natural level of salinity is equal to or greater than ten (10) parts per thousand, 95 percent or more of the time.

"Secondary Contact Recreational Activities" means any recreational activities in which there is minimal contact by the human body with the water, and the probability of ingestion of the water is minimal, such as boating and fishing.

"Sewage or wastewater" means human waste, or wastes from toilets and other receptacles intended to receive or retain body waste, and any wastes, including wastes from households, commercial establishments, and industries.

"Sewage from vessels" means human body wastes and the wastes from toilets and other receptacles intended to receive or retain body wastes that are discharged from vessels, and regulated under Section 312 of the Clean Water Act or under Rhode Island law.

"Sewage sludge or sludge" means residue, partially solid, or solid, treated or untreated, resulting from the treatment of sewage, including such residues from the cleaning of sewers, by processes such as settling, flotation, filtration and centrifugation, and does not meet the criteria for a hazardous waste.

"Sewer" means a pipe or conduit that conveys wastewater or stormwater.

"Site" means the land or water area where any facility or activity is physically located or conducted, including adjacent land used in connection with the facility or activity.

"Special Resource Protection Waters (SRPW)" means surface waters identified by the Director as having significant recreational or ecological uses, and may include but are not limited to: wildlife refuge or management areas; public drinking water supplies; State and Federal parks; State and Federal designated Estuarine Sanctuary Areas; waterbodies containing critical habitats, including but not limited to waterbodies identified by the RIDEM Natural Heritage Program as critical habitat for rare or endangered species; wetland types or specific wetlands listed as rare, threatened, endangered, of special interest or of special concern by the Rhode Island Natural Heritage Program; waterbodies identified by the U. S. Department of the Interior on the Final List of Rivers for potential inclusion in the National Wild and Scenic Rivers System.

"State Guide Plan" shall mean goals, policies, or plan elements for the physical, economic, and social development of the state, adopted by the State Planning Council in accordance with §42-11-10 of the General Laws of Rhode Island, 1956, as amended.

"Storm sewer" means a sewer which conveys stormwater.

"Stormwater" means precipitation induced runoff.

"Surface water" means any waters of the state that are not groundwaters.

"Total Maximum Daily Load" or "TMDL" means the amount of a pollutant that may be discharged into a waterbody and still maintain water quality standards. The TMDL is the sum of the individual wasteload allocations for point sources and the load allocations for nonpoint sources and natural background taking into account a margin of safety.

"Toxicity" means the chemical, biological or biochemical adverse effect(s) of a pollutant or combination of pollutants on organisms.

"Toxic Pollutant" means any pollutant that has the potential to cause toxicity.

"Treatment works" means any devices and systems for the storage, treatment, recycling, and reclamation of wastewater; any devices and systems for the storage, treatment, recycling and reclamation of sewage from vessels used to implement section 201 of the Act; or any devices and systems necessary to recycle or reuse water at the most economical cost over the design life of the works. These include intercepting sewers, outfall sewers, sewage collection systems, pumping, power, and other equipment, and their appurtenances, extensions, improvements, remodeling, additions, and alterations thereof; elements essential to provide a reliable recycled supply such as standby treatment units and clear well facilities; and any works, including acquisition of the land that will be an integral part of the treatment process or is used for ultimate disposal of residues resulting from such treatment (including land for composting sludge, temporary storage of such compost and land used for the storage of treated wastewater in land treatment systems prior to land application); or any other method or system for preventing, abating, reducing, storing, treating, separating, or disposing of wastewater, including wastewater in combined sewers.

"Undesirable or Nuisance Species" means any plant or animal aquatic species which becomes so numerous due to pollutants or physical or hydrological modifications that it interferes with, or indicates an impairment of, the designated use(s) of a waterbody.

"Use Attainability Analyses" means a structured scientific assessment of the factors affecting the attainment of a use which may include physical, chemical, biological, and economic factors. The physical, chemical and biological factors affecting the attainment of a use shall be evaluated through a waterbody survey and assessment. Waterbody surveys and assessments shall be sufficiently detailed to evaluate at a minimum:

- a. current aquatic uses achieved in the waterbody;
- b. causes of any impairment of the aquatic uses and why the impairment cannot be rectified; and
- c. aquatic uses(s) that can be attained based on the physical, chemical, and biological characteristics of the water body.

"Vessel" means any boat or other watercraft whether moved by oars, paddles, sails or other power mechanism, inboard or outboard, or any other boat or structure floating upon the water whether or not capable of self-locomotion, including house boats, floating businesses, barges and similar floating objects.

"Wasteload allocation" means the portion of a receiving water's loading capacity that is allocated to one of its point sources of pollution.

"Wastewater" refer to definition of sewage.

"Waterbody segment" means a defined section or described area which is part of a larger surface waterbody of the state.

"Water quality criteria" means elements of the State water quality standards, expressed as constituent concentrations, levels, or narrative statements, representing a quality of water that supports a particular use.

"Water quality limited waters" means any segment of a surface waterbody where the water quality does not meet applicable water quality standards, and is not expected to meet applicable water quality standards, even after the application of the technology-based effluent limitations required by Sections 301(b) and 306 of the Act.

"Water quality standard" means provisions of State or Federal law which consist of a designated use(s) and water quality criteria for the waters of the State. Water Quality Standards also consist of an antidegradation policy.

"Waters of the State" or "The Waters" means all surface water and groundwater of the State of Rhode Island, including all tidewaters, territorial seas, wetlands, and land masses partially or wholly submerged in water; and both inter- and intra-state bodies of water which are, have been or will be used in commerce, by industry, for the harvesting of fish and shellfish or for recreational purposes.

"Wetlands" means those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas. Freshwater wetlands are determined by the Department in accordance with the Rules and Regulations Governing the Administration and Enforcement of the Freshwater Wetlands Act, as amended. Coastal wetlands are determined by rules and regulations under the jurisdiction of the Coastal Resources Management Council.

Rule 8. - SURFACE WATER QUALITY STANDARDS

A. Purpose. A water quality standard defines the water quality goals of a surface waterbody, or portion thereof, by designating the use or uses of the water and by setting criteria necessary to protect the uses. Water quality standards are intended to protect public health, safety and welfare, enhance the quality of water and serve the purposes of the Clean Water Act and Chapter 46-12 of the General Laws of Rhode Island. "Serve the purposes of the Act" (as defined in Section 101(a)(2) and 303(c) of the Clean Water) means that water quality standards should, whenever attainable, provide water quality, including quantity, for the protection and propagation of fish and wildlife and for recreation in and on the water and take into consideration their use and value as public water supplies, propagation of fish and wildlife, recreation in and on the water, agricultural, industrial, and other purposes including navigation.

Such standards serve the dual purposes of establishing the water quality goals for a specific surface water body or waterbody segment and serve as the regulatory basis for the establishment of water-quality-based-treatment controls and strategies beyond the technology-based levels of treatment required by Sections 301(b) and 306 of the Clean Water Act.

B. Water Use Classification - The surface waters of the state shall be assigned to one of the classes listed below. Each class is defined by the designated uses, which are the most sensitive and therefore governing water uses which it is intended to protect. Surface waters may be suitable for other beneficial uses, but shall be regulated to protect and enhance the designated uses. In no case shall waste assimilation or waste transport be considered a designated use.

(1). Freshwater:

(a). Class A[@] - These waters are designated as a source of public drinking water supply, for primary and secondary contact recreational activities and for fish and wildlife habitat. They shall be suitable for compatible industrial processes and cooling, hydropower, aquacultural uses, navigation, and irrigation and other agricultural uses. These waters shall have good aesthetic value.

(b). Class B^{*} - These waters are designated for fish and wildlife habitat and primary and secondary contact recreational activities. They shall be suitable for compatible industrial processes and cooling, hydropower, aquacultural uses, navigation, and irrigation and other agricultural uses. These waters shall have good aesthetic value.

(c). Class B1^{*} - These waters are designated for primary and secondary contact recreational activities and fish and wildlife habitat. They shall be suitable for compatible industrial processes and cooling, hydropower, aquacultural uses, navigation, and irrigation and other agricultural uses. These waters shall have good aesthetic value. Primary contact recreational activities may be impacted due to pathogens from approved wastewater discharges. However all Class B criteria must be met.

(d). Class C - These waters are designated for secondary contact recreational activities and fish and wildlife habitat. They shall be suitable for compatible industrial processes and cooling, hydropower, aquacultural uses, navigation, and irrigation and other agricultural uses. These water shall have good aesthetic value.

[@] Class A waters used for public drinking water supply may be subject to restricted recreational use by State and local authorities.

^{*} Certain Class B and B1 waterbody segments may have partial use designations assigned to them as noted in rule 8.B.(3) below.

(2). Seawater:

(a). Class SA^{*} - These waters are designated for shellfish harvesting for direct human consumption, primary and secondary contact recreational activities, and fish and wildlife habitat. They shall be suitable for aquacultural uses, navigation and industrial cooling. These waters shall have good aesthetic value.

(b). Class SB^{*} - These waters are designated for primary and secondary contact recreational activities; shellfish harvesting for controlled relay and depuration; and fish and wildlife habitat. They shall be suitable for aquacultural uses, navigation, and industrial cooling. These waters shall have good aesthetic value.

(c). Class SB1^{*} - These waters are designated for primary and secondary contact recreational activities and fish and wildlife habitat. They shall be suitable for aquacultural uses, navigation, and industrial cooling. These waters shall have good aesthetic value. Primary contact recreational activities may be impacted due to pathogens from approved wastewater discharges. However all Class SB criteria must be met.

(d). Class SC - These waters are designated for secondary contact recreational activities, and fish and wildlife habitat. They shall be suitable for aquacultural uses, navigation, and industrial cooling. These waters shall have good aesthetic value.

* Certain Class SA, SB and SB1 waterbody segments may have partial use designations assigned to them as noted in rules 8.B(3) below.

(3). Partial Uses - In accordance with rule 19 of these regulations, the Department may designate a partial use for the above listed water use classifications. Partial use denotes specific restrictions of use assigned to a waterbody or waterbody segment that may affect the application of criteria. For example, a partial use designation may be appropriate where waters are impacted by activities such as combined sewer overflows and concentrations of vessels. Additional partial uses may be so designated by the Director if provided in accordance with rule 19.

(a). CSO - These waters will likely be impacted by combined sewer overflows in accordance with approved CSO Facilities Plans and in compliance with rule 19.E.1 of these regulations and the Rhode Island CSO Policy. Therefore, primary contact recreational activities; shellfishing uses; and fish and wildlife habitat will likely be restricted.

(b). Concentration of Vessels - these waters are in the vicinity of marinas and/or mooring fields and therefore seasonal shellfishing closures will likely be required as listed in the most recent (revised annually) RIDEM document entitled Shellfish Closure Areas. For Class SA waters, all Class SA criteria must be attained at all times.

Please note that partial use designations are represented by the lower case letters, "a" or "b", which appear in brackets next to the classification as found in Appendix A.

C. Water Quality Classifications - All surface waters of the State have been categorized according to the water use classification of rules 8.B.(1), (2), and (3) based on considerations of public health, safety and welfare, recreation, propagation and protection of fish and wildlife, and economic and social benefit. The surface waters of the State are classified according to the list of water segments in Appendix A. For waterbodies not listed in Appendix A, the following apply:

(1). All streams tributary to Class A waters shall be Class A.

(2). All freshwaters hydrologically connected by surface waters and upstream of Class B, B1, SB, SB1, C or SC waters shall be Class B unless otherwise identified in Appendix A of these regulations.

(3). All other fresh waters, including, but not limited to, ponds, kettleholes and wetlands not listed in Appendix A shall be considered to be Class A.

(4). All seawaters not listed in Appendix A shall be considered to be Class SA. All saltwater and brackish wetlands contiguous to seawaters not listed in Appendix A shall be considered to be Class SA.

(5). All saltwater and brackish wetlands contiguous to seawaters listed in Appendix A shall be considered the same class as their associated seawaters.

D. Water Quality Criteria - The following physical, chemical and biological criteria are parameters of minimum water quality necessary to support the surface water use classifications of rule 8.B. and shall be applicable to all waters of the State.

(1). General Criteria - The following minimum criteria are applicable to all waters of the State, unless criteria specified for individual classes are more stringent:

(a). At a minimum, all waters shall be free of pollutants in concentrations or combinations or from anthropogenic activities subject to these regulations that:

- i. Adversely affect the composition of fish and wildlife;
- ii. Adversely affect the physical, chemical, or biological integrity of the habitat;
- iii. Interfere with the propagation of fish and wildlife;
- iv. Adversely alter the life cycle functions, uses, processes and activities of fish and wildlife; or
- v. Adversely affect human health.

(b). Aesthetics - all waters shall be free from pollutants in concentrations or combinations that:

- i. Settle to form deposits that are unsightly, putrescent, or odorous to such a degree as to create a nuisance, or interfere with the existing or designated uses;
- ii. Float as debris, oil, grease, scum or other floating material attributable to wastes in amounts to such a degree as to create a nuisance or interfere with the existing or designated uses;
- iii. Produce odor or taste or change the color or physical, chemical or biological conditions to such a degree as to create a nuisance or interfere with the existing or designated uses; or,
- iv. Result in the dominance of species of fish and wildlife to such a degree as to create a nuisance or interfere with the existing or designated uses.

(c). Radioactive substances - The level of radioactive materials in all waters shall not be in concentrations or combinations which will likely be harmful to humans, fish and wildlife, or result in concentrations in organisms producing undesirable conditions.

(d). Nutrients - Nutrients shall not exceed the limitations specified in rule 8.D.(2) and 8.D.(3) and/or more stringent site-specific limits necessary to prevent or minimize accelerated or cultural eutrophication.

(e). Thermal Mixing Zones - In the case of thermal discharges into tidal rivers, fresh water streams or estuaries, where thermal mixing zones are allowed by the Director, the mixing zone will be limited to no more than one quarter (1/4) of the cross sectional area and/or volume of river flow, stream or estuary, leaving at least three quarters (3/4) free as a zone of passage. In wide estuaries and oceans, the limits of mixing zones will be established by the Director.

(f). Non-thermal Mixing Zones - In the case of non-thermal discharges, in applying these standards the Director may recognize, where appropriate, a limited acute and/or chronic mixing zone(s) on a case-by-case basis. The locations, size and shape of these zones shall provide for the maximum protection of fish and wildlife.

(g). At a minimum, all mixing zones must:

- i. Meet the criteria for aesthetics, in accordance with rule 8.D.(1).b;
- ii. Be limited to an area or volume that will prevent interference with the existing and designated uses in the associated waterbody segment and beyond;
- iii. Allow an appropriate zone of passage for migrating fish and other organisms, prohibit lethality to organisms passing through the mixing zone, and protect for spawning and nursery habitat; and
- iv. Not allow substances to accumulate in sediments, fish and wildlife or food chains such that known or predicted safe exposure levels for the health of humans or fish and wildlife will be exceeded.

(2). Class-specific Criteria for Freshwaters - see Table 1

(3). Class-specific Criteria for Seawaters - see Table 2

E. Applicable Conditions - The water quality standards apply under the most adverse conditions, as determined by the Director according to sound engineering and scientific practices as defined below. For non-flowing freshwaters, most adverse conditions will be defined on a case-by-case basis.

(1). For activities that will likely cause or contribute to flow alterations, streamflow conditions must be adequate to support existing and designated uses.

(2). The ambient water quality criteria are applicable at or in excess of the following flow conditions:

(a). Aquatic Life Criteria - The acute and chronic aquatic life criteria for freshwaters shall not be exceeded at or above the lowest average 7 consecutive day low flow with an average recurrence frequency of once in 10 years (7Q10). The acute and chronic aquatic life criteria for seawater shall not be exceeded beyond the boundary of the mixing zone(s), as defined and determined by rules 8.D.(1).e,f and g of these regulations, and thence throughout the waterbody. If a mixing zone has not been established, these criteria shall not be exceeded in any portion of the receiving water.

(b). Human Health Criteria - The freshwater human health criteria for non-carcinogens are applicable at or in excess of the lowest average 30 consecutive day low flow with an average recurrence frequency of once in 5 years (30Q5). The freshwater human health criteria for carcinogens are applicable at or in excess of the harmonic mean flow, which is a long-term mean flow value calculated by dividing the number of daily flows analyzed by the sum of the reciprocals of those daily flows. For seawaters, the ambient human health water quality criteria for carcinogens and non-carcinogens are applicable when the most adverse hydrographic and pollution conditions occur at the particular point of evaluation.

F. Federal Approval and Periodic Review - These water quality standards are subject to approval by the administrator pursuant to section 303(c) of the Clean Water Act. In accordance with paragraph 303(c)(1) of the Act, the Water Quality Standards shall be reviewed periodically but at least once every three years, and amended as necessary.

G. Symbolic Representative of Water Quality Standards - The Director shall issue maps from time to time which indicate assigned water use classification.

TABLE 1. 8.D.(2). Class-Specific Criteria - Fresh Waters

CRITERION	CLASS A*	CLASS B AND B1	CLASS C
1. Dissolved Oxygen	<p><u>Cold Water Fish Habitat</u> - Dissolved oxygen content of not less than 75% saturation, based on a daily average, and an instantaneous minimum dissolved oxygen concentration of at least 5 mg/l. For the period from October 1st to May 14th, where in areas identified by the RI Division of Fish and Wildlife as cold water fish spawning areas the following criteria apply: For species whose early life stages are not directly exposed to the water column (ie, early life stages are intergravel), the 7 day mean water column dissolved oxygen concentration shall not be less than 9.5 mg/l and the instantaneous minimum dissolved oxygen concentration shall not be less than 8 mg/l. For species that have early life stages exposed directly to the water column, the 7 day mean water column dissolved oxygen concentration shall not be less than 6.5 mg/l and the instantaneous minimum dissolved oxygen concentration shall not be less than 5.0 mg/l.</p> <p><u>Warm Water Fish Habitat</u> - Dissolved oxygen content of not less than 60% saturation, based on a daily average, and an instantaneous minimum dissolved oxygen concentration of at least 5.0 mg/l. The 7 day mean water column dissolved oxygen concentration shall not be less than 6 mg/l.</p>		
2. Sludge deposits, solid refuse, floating solids, oil, grease, scum	None allowable.	None in such amounts that would impair any usages specifically assigned to this class.	
3. Color and turbidity.	None in such concentrations that would impair any usages specifically assigned to this class. Turbidity not to exceed 5 NTU over background.	None in such concentrations that would impair any usages specifically assigned to this class. Turbidity not to exceed 10 NTU over natural background.	
4. Total Coliform bacteria (MPN/100ml)	Not to exceed a geometric mean value of 100 and not more than 10% of the samples shall exceed a value of 500.	Not to exceed a geometric mean value of 1,000 and not more than 20% of the samples shall exceed a value of 2,400.	None in such concentrations that would impair any usages specifically assigned to this class.
5. Fecal Coliform bacteria (MPN/100ml)	Not to exceed a geometric mean value of 20 and not more than 10% of the samples shall exceed a value of 200.	Not to exceed a geometric mean value of 200 and not more than 20% of the samples shall exceed a value of 500.	Not applicable.
6. Taste and odor	None other than of natural origin and none associated with nuisance algal species.	None in such concentrations that would impair any usages specifically assigned to this class nor cause taste or odor in edible portions of fish.	
7. pH (Standard Units)	6.5 - 9.0 or as naturally occurs.		
8. Temperature increase	The temperature increase shall not raise the temperature of the receiving waters above the recommended limit on the most sensitive receiving water use nor cause the growth of undesirable or nuisance species of biota and in no cases exceed 83 degrees F. Heated discharges into designated coldwater habitats shall not raise the temperature above 68 degrees F outside an established thermal mixing zone. In no case shall the temperature of the receiving water be raised more than 4 degrees F.		

TABLE 1. 8.D.(2). Class-Specific Criteria - Fresh Waters, cont.

CRITERION	CLASS A*	CLASS B AND B1	CLASS C
9. Chemical constituents	<p>a. None in concentrations or combinations that could be harmful to humans or fish and wildlife for the most sensitive and governing water class use, or unfavorably alter the biota, or which would make the waters unsafe or unsuitable for fish and wildlife or their propagation, impair the palatability of same, or impair waters for any other existing or designated use. None in such concentrations that would exceed the Water Quality Criteria and Guidelines as found in Appendix B.</p> <p>b. The ambient concentration of a pollutant in a water body shall not exceed the Ambient Water Quality Criteria and Guidelines, (Appendix B) for the protection of aquatic organisms from acute or chronic effects, unless the criteria or guidelines are modified by the Director based on results of bioassay tests conducted in accordance with the terms and conditions provided in the RIDEM Site Specific Aquatic Life Water Quality Criteria Development Policy.</p>		
10. Nutrients	<p>a. Average Total Phosphorus shall not exceed 0.025 mg/l in any lake, pond, kettlehole or reservoir, and average Total P in tributaries at the point where they enter such bodies of water shall not cause exceedance of this phosphorus criteria, except as naturally occurs, unless the Director determines, on a site-specific basis, that a different value for phosphorus is necessary to prevent cultural eutrophication.</p> <p>b. None in such concentration that would impair any usages specifically assigned to said Class, or cause undesirable or nuisance aquatic species associated with cultural eutrophication, nor cause exceedance of the criterion of 10(a) above in a downstream lake, pond, or reservoir. New discharges of wastes containing phosphates will not be permitted into or immediately upstream of lakes or ponds. Phosphates shall be removed from existing discharges to the extent that such removal is or may become technically and reasonably feasible.</p>		
<p>* Class A waters used for public drinking water supply may be subject to restricted recreational use by State and local authorities.</p>			

TABLE 2. 8.D.(3). Class-Specific Criteria - Sea Waters

CRITERION	CLASS SA	CLASS SB AND SB1	CLASS SC
1. Dissolved Oxygen	Not less than 6.0 mg/l at any place or time, except as naturally occurs. Normal seasonal and diurnal variations which result in <u>insitu</u> concentrations above 6.0 mg/l not associated with cultural eutrophication will be maintained in accordance with the Antidegradation Implementation Policy.	Not less than 5 mg/l at any place or time, except as naturally occurs. Normal seasonal and diurnal variations which result in <u>insitu</u> concentrations above 5.0 mg/l not associated with cultural eutrophication will be maintained in accordance with the Antidegradation Implementation Policy.	
2. Sludge deposits, solid refuse, floating solids, oil, grease, scum	None allowable.		None in such amounts that would impair any usages specifically assigned to this class.
3. Color and turbidity	None in such concentrations that would impair any usages specifically assigned to this class. Turbidity not to exceed 5 NTU over background.	None in such concentrations that would impair any usages specifically assigned to this class. Turbidity not to exceed 10 NTU over background.	
4. Total Coliform bacteria (MPN/100ml)	Not to exceed a geometric mean MPN value of 70 and not more than 10% of the samples shall exceed an MPN of 330 for a 3-tube decimal dilution.	Not to exceed a geometric mean MPN value of 700 and not more than 10% of the samples shall exceed a value of 2,300.	None in such concentrations that would impair any usages specifically assigned to this class.
5. Fecal Coliform bacteria (MPN/100ml)	Not to exceed a geometric mean MPN value of 14 and not more than 10% of the samples shall exceed an MPN value of 49 for a three-tube decimal dilution.	Not to exceed a median geometric mean MPN value of 50 and not more than 10% of the samples shall exceed a value of 500.	None in such concentrations that would impair any usages specifically assigned to this class.
6. Taste and odor	None allowable except as naturally occurs.	None in such concentrations that would impair any usages specifically assigned to this class nor cause taste or odor in edible portions of fish or shellfish.	
7. pH (Standard Units)	6.5 - 8.5 but not more than 0.2 units outside of the normally occurring range.		
8. Temperature increase	None except where the increase will not exceed the recommended limit on the most sensitive receiving water use and in no case exceed 83 degrees F nor raise the normal temperature more than 1.6 degrees F, 16 June through September and not more than 4 degrees F from October through 16 June. All measurements shall be made at the boundary of such mixing zones as is found to be reasonable by the Director.		

TABLE 2. 8.D.(3). Class-Specific Criteria - Sea Waters, cont.

CRITERION	CLASS SA	CLASS SB and SB1	CLASS SC
9. Chemical constituents	<p>a. None in concentrations or combinations that could be harmful to humans or fish and wildlife for the most sensitive and governing water class use, or unfavorably alter the biota, or which would make the waters unsafe or unsuitable for fish and wildlife or their propagation, impair the palatability of same, or impair the waters for any other existing or designated use. None in such concentrations that would exceed the Water Quality Criteria and Guidelines as found in Appendix B.</p> <p>b. The ambient concentration of a pollutant in a water body shall not exceed the RI DEM Ambient Water Quality Criteria & Guidelines (Appendix B) for the protection of aquatic organisms from acute or chronic effects, unless the criteria or guideline is modified by the Director based on results of bioassay tests conducted in accordance with the terms and conditions provided in the RIDEM Site Specific Aquatic Life Water Quality Criteria Development Policy.</p>		
10. Nutrients	<p>None in such concentration that would impair any usages specifically assigned to said Class, or cause undesirable or nuisance aquatic species associated with cultural eutrophication. Shall not exceed site-specific limits if deemed necessary by the Director to prevent or minimize accelerated or cultural eutrophication. Total phosphorus, nitrates and ammonia may be assigned site-specific permit limits based on reasonable Best Available Technologies. Where waters have low tidal flushing rates, applicable treatment to prevent or minimize accelerated or cultural eutrophication may be required for regulated nonpoint source activities.</p>		

Rule 9. - EFFECT OF ACTIVITIES ON WATER QUALITY STANDARDS

A. Activities Shall Not Violate Water Quality Standards - No person shall discharge pollutants into any waters of the State or perform any activities alone or in combination which the Director determines will likely result in the violation of any State water quality criterion or interfere with one or more of the existing or designated uses assigned to the receiving waters or to downstream waters in accordance with rules 8.B., 8.C., 8.D., and 18 of these regulations. In addition, Best Management Practices, as determined by the Director, shall be used to control erosion, sedimentation and runoff in accordance with rule 15.

B. Activities Shall Not Further Degrade Low Quality Waters - No person shall discharge pollutants into any waters of the State, or perform any activities alone or in combination which the Director determines will likely result in the additional degradation of water quality of the receiving waters or downstream waters which are already below the water quality standard assigned to such waters.

C. Activities Shall Not Violate Antidegradation - No person shall discharge pollutants into any waters of the State, or perform any activities alone or in combination which the Director determines will likely result in a violation of the Antidegradation provisions of these regulations (rule 18).

D. Mixing zone - Due to discharges to surface waters, the Director may recognize, where appropriate, a limited mixing zone on a case-by-case basis. In no case may a mixing zone cause a loss of, or impair, any existing or designated use.

E. Restrictions to New Discharges - New discharges into Class A or SA waters (refer to Appendix A) or into waters designated Class B, C, SB or SC which have attained the Class A or SA standard shall be allowed, provided the discharge will not impair existing uses nor attainment of designated uses and all other provisions of these regulations are complied with including all required approvals, as follows:

(1). New discharges into the terminal reservoir of a public drinking water supply shall be prohibited with the exception of discharges of stormwater drainage. New discharges into all other waters of the public drinking water supply shall be prohibited with the exception of the types listed in rule 9.E.(2).(a) through (f). Notification will be made to the affected public drinking water supplier and the Department of Health of a proposed new discharge to a public drinking water supply which is under review by this Department in accordance with these regulations.

(2). New discharges into waters that are not public drinking water supplies may include:

(a). discharges of stormwater drainage;

(b). discharges from industrial non-contact cooling water;

(c). discharges from construction site dewatering provided that the applicant has demonstrated to the satisfaction of the Director that no reasonable alternatives exist;

(d). discharges from groundwater remediation projects provided that the applicant has demonstrated to the satisfaction of the Director that no reasonable alternatives exist;

- (e). discharges from aquaculture facilities as appropriately authorized by all required state agencies;
- (f). discharges from water main maintenance such as main flushing and cleaning operations;
- (g). discharges of dredged material;
- (h). discharges from farming activities into surface waters which are hydrographically disconnected from all other surface waters;
- (i). placement of suitable solid materials in appropriate amounts for the purpose of the formation of an artificial reef as approved by the Director;
- (j). discharges from aquatic research related activities provided that the applicant has demonstrated to the satisfaction of the Director that no reasonable alternatives exist;
- (k) discharges from desalination facilities into seawaters; and
- (l). other new discharges provided the applicant demonstrates to the satisfaction of the Director that:
 - i. the discharge serves a compelling public purpose which provides benefits to the public as a whole as opposed to individual or private interests;
 - ii. there is no reasonable alternative means of, or location for, serving the compelling public purpose cited; and
 - iii. the discharge will not impair existing uses nor attainment of designated uses.

Rule 10. - PROCEDURES FOR DETERMINING ADDITIONAL REQUIREMENTS FOR EFFLUENT LIMITATIONS, TREATMENT AND PRETREATMENT

A. Effluent Limited and Water Quality Limited Waters - No person shall discharge pollutants into any surface waters of the State or discharge to a treatment works unless the discharge complies with any additional effluent limitations and receives any additional treatment/pretreatment which the Director determines is necessary to comply with rule 9 of these regulations, or to prevent overloading or damaging effect upon a treatment works. In order to determine which waters require additional effluent limitations, treatment or pretreatment to comply with rule 9 of these regulations, or to prevent overloading or damaging effects upon a treatment works, the Director will categorize the surface waters of the State into effluent limited and water quality limited waters. Such classifications will be recorded in the 305(b) biennial state of the State's waters reports, and will be revised as necessary.

B. Total Maximum Daily Loads in Water Quality Limited Waters - For water quality limited waters, the Director shall identify those pollutants within discharges to the water quality limited waters which do or have the reasonable potential to cause or contribute to a violation of rule 9 of these regulations. The Director shall develop a total maximum daily load (TMDL) for each of these pollutants. The TMDL shall determine the maximum amount of the pollutant that can be discharged into the water quality limited waters and be in compliance with rule 9 of these

regulations. The TMDL shall be based on best available scientific information and allocation of the TMDL may be based on, but not limited to, technical feasibility of pollutant removal, the relative costs of treatment to the contributing discharges, and the relative contribution from each source. The Director shall not be required to allocate the full amount of the pollutant specified in rule 9, but may designate a portion of the allocation as a reserve or margin of safety as deemed necessary.

Rule 11. - PROHIBITED DISCHARGES

A. General - The prohibitions enumerated in this rule apply to all pollutants, regardless of the effect on water quality standards or the treatment which the pollutants receive.

B. Pollutants - No person shall discharge pollutants into the waters of the State except as in compliance with the provisions of Chapter 46-12, or other applicable chapters, of the Rhode Island General Laws or these regulations, and pursuant to the terms and conditions of an approval issued by DEM thereunder.

C. Urban Runoff - No person shall discharge storm water, gutter runoff, sump discharges, or street runoff to a treatment works designed to receive only wastewater.

D. Hazardous Waste and Hazardous Substances - No person shall discharge hazardous waste or hazardous substances into any waters of the State or discharge hazardous waste or hazardous substances into a wastewater treatment works, except as in compliance with the provisions of Chapter 46-12, or other applicable chapters of the Rhode Island General Laws or these regulations, and in accordance with the terms and conditions of an approval issued by the Director or municipality as may be required under the Rhode Island Pretreatment Regulations.

E. Oil, Petroleum Products, Solvents - No person shall discharge oil, petroleum products or industrial solvents into treatment works designed to treat or control only wastewater or stormwater unless it conforms with Federal, State and local pretreatment requirements. No person shall discharge oil or petroleum products into the waters of the State except as in compliance with the provisions of Rhode Island General Laws Chapter 46-12, or other applicable chapters of the Rhode Island General Laws or these regulations, and in accordance with the terms and conditions of an approval issued by DEM thereunder.

F. Discharges of Sewage from Vessels

(1). No person shall discharge any sewage from a vessel into the waters of the State except in accordance with these regulations and if discharged via a marine toilet which is either a Type I or Type II marine sanitation device in proper working condition.

(2). No person shall discharge any sewage from a vessel into the waters of the State in an area which has been declared to be a No Discharge Area.

(3). No person shall operate or moor in the waters of the State a vessel equipped with a marine toilet that is: (a) not a type approved pursuant to the CWA; or, (b) an approved type that is not in proper working condition.

(4). All vessels operated or moored in a declared No Discharge Area/Zone of the State's waters shall have the vessel's marine toilets properly sealed to prevent overboard

discharges by one of the following means: the through-hull fitting is plugged; or the Y-valve is secured to the holding tank position by means of a padlock, wire tie, or by removing the seacock handle. All sewage must be discharged to an approved marina pump-out facility.

(5). The Director will identify No Discharge Areas/Zones using criteria established under the CWA [33 U.S.C. § 1251 et seq] and 40 CFR 140.4, and will seek federal designation of such areas, with advice and comment provided by the Coastal Resources Management Council (CRMC). Municipalities of the State may nominate, to the Director, areas for designation as No Discharge Areas/Zones only as an element of a Harbor Management Plan (HMP) approved by the CRMC in accordance with established regulation.

Rule 12. - STRATEGIC PLAN CONSISTENCY

In addition to the other requirements of these regulations, no person shall discharge any pollutants into any waters of the State so as to violate any legally applicable requirements of a plan approved by the Governor of Rhode Island and the administrator pursuant to sections 208(6), 319 and 320 of the Clean Water Act.

Rule 13. - APPROVALS

A. No person shall discharge any pollutant into, or conduct any activity which will likely cause or contribute pollution to the waters of the State or construct, install, or modify any treatment works including the extension of sewers to an existing sewer system without having obtained all required approvals from the Director. The types of approval for the purposes of these regulations may include the following:

- (1). Rhode Island Pollutant Discharge Elimination System (RIPDES) permit by DEM, Water Resources in accordance with the RIPDES Regulations.
- (2). Order of Approval from DEM, Water Resources for any treatment works in accordance with rules 14 - 17 below.
- (3). Water Quality Certificate - certain activities require approval in the form of a certification by DEM, Water Resources that the proposed project(s) or activity(ies) does not violate these regulations.
 - (a). In accordance with Section 401 of the CWA, applicants for any project which may result in a discharge to waters of the State and which requires a federal permit must directly apply for and receive a Water Quality Certification from DEM, Water Resources.
 - (b). Those projects involving one or more of the activities listed below which are within the jurisdiction of the Rhode Island Coastal Resources Management Council in accordance with R.I.G.L. Section 46-23 and which do not require an approval in accordance with the Rhode Island Freshwater Wetlands Act (R.I.G.L. Section 2-1-18 et. seq.) or any rules and regulations promulgated thereto, must directly apply for and receive a Water Quality Certification from DEM, Water Resources.

- i. Dredging and Dredged Material Disposal*
- ii. Filling of Waters of the State
- iii. Site Disturbances which have the potential to contribute increased pollutants to a Water of the State, specifically:
 - aa. residential development of six (6) or more units;
 - bb. any commercial, industrial, state or municipal land development; or
 - cc. any project which disturbs five (5) or more acres***
- iv. Marinas - construction of new facilities or expansion of existing facilities
- v. Flow Alterations**
- vi. Harbor Management Plans for those elements which will likely affect water quality
- vii. A Point Source Discharge of Pollutants***

* With regard to dredging, discharge of dredge material and placement of dredge material in tidal waters, the standards applied under these regulations shall conform with federal EPA applicable water quality rules, regulations and guidelines, in accordance with the Marine Infrastructure Maintenance Act of 1996.

** Flow Alterations for agricultural irrigation will be managed through coordination with DEM/Agriculture.

*** The permit required under the Rhode Island Pollutant Discharge Elimination System Regulations may act as the Water Quality Certification for the discharge.

B. Public Notice and Hearing for Water Quality Certification - The Director shall give public notice for Water Quality Certification as follows:

- (1). Public Notice - In accordance with Rhode Island General Laws Chapter 42-35, the Director will provide a notice of a thirty (30) day comment period of the initiation of proceedings to review the application for a Water Quality Certification once the application for the Water Quality Certification is deemed complete by the Director.
- (2). Public Hearing - The Department shall hold a public hearing when so requested in accordance with Rhode Island General Laws Chapter 42-35. The Department also may hold a public hearing concerning the application at its discretion, whenever, for instance, such a hearing might clarify one or more issues involved in the application.
- (3). The Director may proceed with review of the project during the comment period, but will not make a final determination on the water quality certification review until the close of the comment period.
- (4). The Director will take into consideration all substantive comments received within the comment period during the review for the water quality certification.
- (5). The Director will notify all commentors of the final decision of the water quality certification review.

Rule 14. - APPLICATION FOR APPROVALS

A. Application - More than one of the approvals noted in rule 13 may be required. Applications for approvals will be on forms provided by or in the manner prescribed by, DEM, Water Resources to be submitted to the Director and shall contain such documentation and/or information as the Director may require, including but not limited to:

- (1). When applicable, documentation that the proposed project is consistent with the currently approved wastewater facility plan or information necessary to modify an approved wastewater facility plan, including but not limited to the project needs, conformance with State Guide Plan policies, goals, and objectives, the basis of design, including design assumptions, data, and calculations;
- (2). Comprehensive engineering report and detailed engineering plans and specifications for the proposed project;
- (3). Timetable for and duration of the proposed construction or other activity;
- (4). Any additional information as may be deemed necessary by the Director to fully assess the impact of the proposed activity upon the waters of the State or to support any changes in the scope of the project, actual or anticipated;
- (5). Any additional information including proprietary data, where, in the opinion of the Director, such information is necessary to fully disclose all relevant facts concerning the application for an approval. The applicant may assert a claim of confidentiality for proprietary data as defined in R.I. Gen. Law 38-2-2 provided said information is clearly marked and segregated within the total information requested by the Department; and
- (6). A preponderance of clear and scientifically valid evidence having a probative value demonstrating, to the satisfaction of the Director, that the activity will not violate the surface water quality standards established by these Water Quality Regulations, and amendments thereto.

B. Professional Certification for Plans and Specifications - All engineering plans and specifications required under rule 14.A. shall be certified by a professional engineer registered in the State pursuant to Chapter 5-8 of the General Laws of Rhode Island of 1956, as amended.

C. Failure of the applicant to submit information deemed necessary by the Department in order to fully assess the impact of the proposed project on waters of the State or to support any changes in the scope of the proposed project, actual or anticipated, shall constitute valid cause for denial of the application.

Rule 15. - PROCEDURES FOR REVIEW FOR APPROVAL

A. In consideration of the application, the Department may use, but is not limited to, the following documents: Guides for the Design of Wastewater Treatment Works (TR-16), published by the New England Interstate Water Pollution Control Commission; Design of Municipal Wastewater Treatment Plants (WEF Manual of Practice #8 & ASCE Manual and Report on Engineering Practice #76), jointly published by the Water Environment Federation and the American Society of Civil Engineers; the most recent version of the Rhode Island Soil Erosion and Sediment Control Handbook, developed jointly by R.I. DEM and U.S. Department of Agriculture Natural Resources Conservation Service; State of Rhode Island Stormwater Design and Installation Standards Manual, developed jointly by R.I. DEM and Coastal Resources

Management Council; Storm Water Management for Construction Activities (EPA 832-R-92-005), by U.S. Environmental Protection Agency; the Technical Support Document for Water Quality-based Toxics Control, March 1991, EPA/505/2-90-001; Evaluation of Dredged Material Proposed for Ocean Disposal Testing Manual, February 1991, EPA-503/8-91/001; Interim Regional Policy for New England Stream Flow Recommendations, U. S. Department of Interior, Fish and Wildlife Service; Water Quality Standards Handbook, 2nd. Ed., August 1994, EPA-823-B-94-005a; and standards or policies accepted by the Department.

B. At any time during review, the Director may:

- (1). Require that the applicant provide such information as the Director deems necessary for the review of the application;
- (2). Issue an approval requiring such terms, conditions, management practices and operation and maintenance requirements as deemed necessary to comply with the requirements of applicable state or federal laws; or
- (3). Deny the application for failure to satisfy the requirements of applicable State or Federal Laws and advise the applicant of the right to appeal under rule 21 of these regulations. A denial may be based on, but is not limited to any or all of the following:
 - (a). A treatment works which is overloaded or inadequate to accept and treat any additional load of pollutants in which case the Director, shall, where appropriate, also deny applications for new sewer connection or additional discharges to the system;
 - (b). An activity or a treatment works or any part thereof, which is likely to substantially contribute to an increase in non-point source pollution which will likely result in a violation of state or federal laws or these regulations or any other regulations of the Department;
 - (c). A treatment works or any part thereof, or a project which is not consistent with the approved Wastewater Facilities Plan;
 - (d). Failure to submit any information required by the Department; or
 - (e). Failure to provide a preponderance of clear and scientifically valid evidence having a probative value demonstrating, to the satisfaction of the Director, that the activity will not violate the surface water quality standards established by these Water Quality Regulations, and amendments thereto.

Rule 16. - EFFECT OF APPROVAL

- A. The issuance of an approval mandates compliance with all terms, conditions, management practices and operation and maintenance requirements set forth in the approval. Any violation of these may result in the finding of a prohibited discharge as set forth in rule 11 of these regulations.
- B. The issuance of an approval does not relieve any person of the continuing responsibility to comply with any applicable rule of these regulations or applicable sections of the Clean Water Act.

C. The issuance of an approval by the Department does not relieve any person of the responsibility for obtaining any other necessary permits or approvals from any federal, state, regional, or local agency.

D. The issuance of an approval does not authorize any injury to persons or property or invasion of other private rights, or any infringement of Federal, State or local law or regulations.

Rule 17. - MODIFICATION, SUSPENSION OR REVOCATION OF APPROVAL

A. The Director may modify, suspend, or revoke, in whole or in part, an approval for cause, including, but not limited to:

(1). Information indicating that the project will likely result in probable harm to the environment or pose a threat to the health, safety and/or welfare of the public;

(2). The existence of a factor or factors which, if properly and timely brought to the attention of the Director, would have justified the application of more or less stringent conditions than required by these regulations, but only if such factor(s) arose after the approval was issued;

(3). Changes in effluent limitations in accordance with rule 10 of these regulations, or changes in the definition(s) of such limitations in the Clean Water Act or applicable Environmental Protection Agency regulations;

(4). Where circumstances on which the approval was based have materially and substantially changed since the approval was issued, including, but not limited to, a change in category of waters from effluent limited to water quality limited, or amendment of these regulations;

(5). The information or data submitted by the applicant or permittee either on the form(s) required or in any other material in support of the application is found to be false, misleading or erroneous; or

(6). The project is not undertaken in strict compliance with the conditions or provisions of any approval issued by the Department.

B. A Notice of Revocation/Suspension of an approval will be in the form of a letter notifying the permittee or subsequent transferee of the revocation or suspension and the reasons why the approval is being revoked or suspended.

C. The party served with a Notice of Revocation/Suspension of an approval may request an adjudicatory hearing to contest the revocation as set forth in the provisions of rule 21. A Notice of Revocation/Suspension of an approval automatically becomes a final order of the Director enforceable in Superior Court upon failure to request said adjudicatory hearing.

D. Request for modification of approval shall be in accordance with rules 14 and 15.

Rule 18. - ANTIDegradation OF WATER QUALITY STANDARDS

A. Purpose - The State Antidegradation Regulations are based on the federal Antidegradation Policy requirements (40 CFR 131.12) and have as their objective the maintenance and protection of various levels of surface water quality and uses. Antidegradation applies to all projects or activities subject to these regulations which will likely lower water quality or affect existing or designated water uses, including but not limited to all Water Quality Certification reviews and any new or modified RIPDES permits. The Antidegradation regulations consist of four (4) tiers of water quality protection.

B. Tier 1 - Protection of Existing Uses - Any existing in-stream water uses and level of surface water quality necessary to protect the existing uses, shall be maintained and protected.

C. Tier 2 - Protection of Water Quality in High Quality Waters - With the exception of Outstanding National Resource Waters, in surface waters where the existing water quality exceeds levels necessary to support propagation of fish and wildlife and recreation in and on the water, that quality shall be maintained and protected, except for insignificant changes in water quality as determined by the Director and in accordance with the Antidegradation Implementation Policy, as amended. An exception to this level of protection may only be allowed if it can be proven to the Director by a preponderance of clear and scientifically valid evidence having a probative value, and the Director finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the RI Continuing Planning Process, that allowing significant water quality degradation is necessary to accommodate important economic and social benefit in the area in which the receiving waters are located. In allowing such significant degradation or lower water quality, the Director shall assure water quality adequate to fully protect existing and designated uses. In allowing a change in water quality, significant or insignificant, all reasonable measures to minimize the change shall be implemented. Adequate scientifically valid documentation shall be provided to the Director demonstrating that designated and existing uses, water quality to protect those uses, and all applicable water quality standards, will be fully protected. Further, the highest statutory and regulating requirements for all new and existing point sources and all cost-effective and reasonable best management practices for non-point source control shall apply.

D. Tier 2½ -Protection of Water Quality for SRPWs - Where high quality waters constitute a SRPW, there shall be no measurable degradation of the existing water quality necessary to protect the characteristic(s) which cause the waterbody to be designated as an SRPW. Notwithstanding that all public drinking water supplies are SRPWs, public drinking water suppliers may undertake temporary and short term activities within the boundary perimeter of a public drinking water supply impoundment for essential maintenance or to address emergency conditions in order to prevent adverse effects on public health or safety, provided that these activities comply with the requirements set forth in rule 18.B. (Tier 1 Protection of Existing Uses) and rule 18.C. (Tier 2 Protection of Water Quality in High Quality Waters).

E. Tier 3 -Protection of Water Quality for ONRWs - Where high quality waters constitute an Outstanding National Resource, as defined in rule 7, that water quality shall be maintained and protected. The State may allow some limited activities that result in temporary and short-term changes in the water quality of an ONRW. Such activities must not permanently degrade water quality or result in water quality lower than that necessary to protect the existing uses in the ONRW.

F. Implementation - The Antidegradation provisions shall be implemented in accordance with the Antidegradation Implementation Policy (Appendix C), as amended.

Rule 19. - MODIFICATION OF WATER QUALITY STANDARDS

A. Authority - The Director has the power and duty in accordance with rule 2 of these regulations and section 46-12-3 (g) of the General Laws of Rhode Island of 1956, as amended, to promulgate water quality standards.

B. Request for Modification - Any person may request that the Director modify a water quality standard. The request must include a preponderance of clear and scientifically valid evidence having a probative value to demonstrate that such modification is consistent with these regulations. In addition, a Use Attainability Analyses (UAA) must be conducted:

- (1). for a request to remove a designated use specified in Section 101(a)(2) of the Act; or
- (2) to propose a subcategory of uses specified in Section 101(a)(2) of the Clean Water Act which require less stringent criteria.

C. Promulgation of Modifications - If the Director determines that modification is appropriate the Director shall initiate promulgation of such modification in accordance with Chapter 42-35 of the R.I. Gen. Laws.

D. General Standards for Conducting the Review - Water quality standards shall protect the public health, safety and welfare, enhance the quality of water and serve the purpose of the Clean Water Act. The Director will take into consideration the conservation, protection, use and value of the waters for public water supplies, propagation of fish and wildlife, recreational purposes, agricultural, industrial, and other purposes, and for navigation.

The Director shall attempt to establish water quality standards which will result in the achievement of the national water quality goal specified in paragraph 101(a)(2) of the Clean Water Act, wherever attainable. In determining whether such standards are attainable for any particular segment, the Director shall take into consideration environmental, technological, social and economic factors. Designation of uses which do not support the protection and propagation of fish and wildlife, and recreation in and on the water (Section 101(a)(2) of the Act), may be granted if supported by a Use Attainability Analyses to the satisfaction of the Director.

The Director shall take into consideration the water quality standards of downstream waters and shall assure that water quality standards provide for the attainment of the water quality standards of downstream waters.

The Director shall adhere to the antidegradation principles of the Antidegradation Policy.

E. Modifications of Designated Uses - Modifying a designated use may result in modifying the applicable criteria of the affected/identified water segment, to criteria necessary to protect the new designated use of that affected/identified water segment. In no case may a criteria be modified if it would adversely affect existing uses or other designated uses.

(1). Downgrading Designated Uses

(a). In waters in which the designated use(s) is not the existing use(s), any person may request that the Director, or the Director may propose, that the designated use be downgraded, or may designate a partial use (rule 8.B.(3)), only where it is demonstrated through the UAA process by a preponderance of clear and scientifically valid evidence having a probative value to the satisfaction of the Director that attaining the designated use is not feasible because:

- i. Naturally occurring background pollutant concentrations or

natural background conditions prevent the attainment of the use;

- ii. Naturally occurring ephemeral, intermittent or low flow conditions or water levels not human-made or human-induced prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating State water conservation requirements to enable uses to be met;
- iii. Human-made or human-induced conditions prevent the attainment of the use and cannot be remedied per item (vi), or would cause more environmental damage to correct than to leave in place;
- iv. Existing dams, diversions or other types of permitted hydrologic modifications which meet all applicable permit and/or water quality certificate requirements preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or to operate such modification in a way that would result in the attainment of the use;
- v. Physical conditions related to the naturally occurring features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality and not human-made or human-induced, preclude attainment of aquatic life protection uses; or
- vi. Controls more stringent than those required by sections 301(b)(1)(A) and (B) and 306 of the Clean Water Act for point source dischargers, and reasonable best management practices for nonpoint source dischargers, would result in substantial and widespread economic and social impact.

It must also be demonstrated to the Director's satisfaction that downgrading or altering the water quality use will not affect the quality of waters beyond the area in which i, ii, iii, iv, v or vi applies nor violate rule 18 (Antidegradation of Water Quality Standards) of these regulations. The Director shall hold a public hearing on such downgrading requests that are determined to have merit.

(b). A designated use may not be downgraded if such uses will be attained by implementing effluent limits required under sections 301(b) and 306 of the Clean Water Act for point sources and by implementing cost-effective and reasonable best management practices for nonpoint source control.

(2). Upgrading Designated Uses - Any person may request that the Director or the Director may propose to upgrade the classification of a water quality segment, including a request to designate a waterbody or waterbody segment as a Special Resource Protection Water (SRPW) or an Outstanding National Resource Water (ONRW). Where current water use classifications specify water uses less sensitive than those which are presently being achieved, the Director shall propose to upgrade the classification of the waters in question to reflect the uses actually being attained. The Director shall hold a public hearing on such requests that are determined to have merit. At the hearing, the applicant must prove by a preponderance of clear and scientifically valid evidence having probative value to the satisfaction of the Director that such a reclassification

satisfies the standards of rule 19.D. or that rule 18 applies.

F. Modification of Criteria - Any person may request that the Director, or the Director may propose to modify an aquatic life water quality criteria. The request and development of site specific criteria shall be in accordance with the most recent RIDEM Site Specific Aquatic Life Water Quality Criteria Development Policy. If the Director determines the criteria modification is appropriate, the Director shall promulgate such modification in accordance with Chapter 42-35 of the R.I. Gen. Laws.

Modification of criteria of a water segment shall not result in a modification of the designated use of the water segment. Newly developed criteria must still protect the existing and designated uses of the water segment.

Rule 20 - VARIANCES FROM WATER QUALITY STANDARDS

A. Conditions for Granting Variances - A variance from the water quality standards may be granted by the Director when the Director has a reasonable belief that the standard can ultimately be attained. A variance from meeting the standard is granted to the discharger for the particular constituent that is causing non-attainment of the standard. All other applicable criteria and standards must be met by the discharger. The criteria protective of the standard must be maintained for all other dischargers on the waterbody. A variance can be granted only under the following conditions:

(1). Non-attainment of the standard is attributed to one of the following:

(a). Naturally occurring background pollutant concentrations or natural background conditions prevent the attainment of the use;

(b). Naturally occurring ephemeral, intermittent or low flow conditions or water levels not human-made or human-induced prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating State water conservation requirements to enable uses to be met;

(c). Human-made or human-induced conditions prevent the attainment of the use and cannot be remedied per item (f), or would cause more environmental damage to correct than to leave in place;

(d). Existing dams, diversions or other types of permitted hydrologic modifications which meet all applicable permit and/or water quality certificate requirements preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or to operate such modification in a way that would result in the attainment of the use;

(e). Physical conditions related to the naturally occurring features of the waterbody, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality and not human-made or human-induced, preclude attainment of aquatic life protection uses; or

(f). Controls more stringent than those required by sections 301(b)(1)(A) and

(B) and 306 of the Clean Water Act for point source dischargers, and reasonable best management practices for nonpoint source dischargers, would result in substantial and widespread economic and social impact.

(2). Treatment more advanced than that required by section 301(b)(1)(A) and (B) has been carefully considered, and that alternative effluent control strategies have been evaluated.

B. Time Limit for Variances - Variances from the water quality standards shall be for a specific period of time not to exceed three (3) years. A variance may be reinstated only upon demonstration that the conditions for granting the variance still apply and reasonable progress toward meeting the standard has been made.

C. Public Notice - The Director may grant a variance, in accordance with this rule, only after public notice, opportunity for comment and a public hearing, in accordance with Rhode Island General Laws Chapter 42-35.

D. Variances for RIPDES Permitted Discharges - Those persons holding a RIPDES permit, or applying for a RIPDES permit, must request a variance in accordance with rules 56-59 of the RIPDES Regulations.

E. Compliance With Other Water Quality Regulations - Issuance of a variance pursuant to this rule does not relieve the holder of the variance from complying with requirements of these regulations which have not been the subject of a variance.

Rule 21. - APPEALS

A. General - The procedures for appeal of Departmental decisions pursuant to the provisions of Section 42-35 of the R.I. General Laws are contained in both "Administrative Rules of Practice and Procedure for the Department of Environmental Management Administrative Adjudication Division for Environmental Matters" and the "Administrative Rules of Practice & Procedure for the Department of Environmental Management".

B. Appeal Procedure for Approval Denials - Any person whose approval application is denied may appeal to the Director for review of the decision on which the denial is based by filing an appeal with DEM/Administrative Adjudication.

(1). Filing of Appeal - All appeals shall be in writing and shall be filed with and received by DEM/Administrative Adjudication within thirty (30) days after the effective date of the denial of the subject application.

(2). Contents of Appeal - Every appeal shall contain the following:

(a). A detailed basis upon which the appeal is taken;

(b). A plat plan of the area of the subject application; and

(c). A list of the names and addresses of the applicant and the municipality in which the property is located.

(3). Notice of Administrative Hearing - Upon the filing of an appeal with DEM/Administrative Adjudication, and once the hearing schedule allows, DEM/Administrative Adjudication shall notify the following, by first class mail, of the date, time and place of the adjudicatory hearing, in conformance with R.I. General Laws Section 42-35-9, as amended: the applicant, the municipality in which the property is located, and the owners of record of real property within 200 feet of any component of the applicant's proposed activity for which the permit is sought that is the subject of the appeal.

C. Appeal Procedure for Notice of Violations, Suspensions or Revocations - Any person who has received a Notice of Violation (NOV) alleging violation of these regulations, or whose approval has been suspended or revoked, may appeal to the Director for review of the decision on which the NOV, suspension or revocation is based by filing an appeal with DEM/Administrative Adjudication.

(1). Filing of Appeal - All appeals shall be in writing and shall be filed with and received by DEM/Administrative Adjudication within ten (10) days after the date of the receipt of the subject NOV, revocation or suspension.

(2). Contents of Appeal - Every appeal shall contain a detailed basis upon which the appeal is taken.

Rule 22. - SAMPLING

A. Water Quality Testing - Surface water samples shall be collected, preserved, and analyzed in accordance with 40 CFR, Part 136, Guidelines establishing Test Procedures for the Analysis of Pollutants. Other methods recommended by the EPA may be used, if legally acceptable.

B. Bioassays - Bioassays shall be performed in accordance with the latest editions of EPA documents entitled Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms, Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms, and Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates or other methods if approved by the Director and legally acceptable. A more detailed explanation of state requirements pertaining to bioassays is given in the most recent RIDEM bioassay protocol.

Rule 23. - EFFECTIVE DATE

The foregoing Water Quality Regulations, after due notice and hearing, are hereby adopted and filed with the Secretary of State this 23rd day of June, 2000 to become effective twenty (20) days thereafter, in accordance with the provisions of Chapters 46-12, 42-17.1 42-17.6 and 42-35 of the General Laws of Rhode Island, 1956, as amended.

Jan H. Reitsma, Director
Department of Environmental Management

Notice Given on: March 27, 2000

Public Hearing held: May 1,2000

Filing Date: June 23, 2000

Effective Date: July 13, 2000

RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
WATER RESOURCES

APPENDIX A

WATER QUALITY

CLASSIFICATION DESCRIPTIONS

AUGUST 6, 1997

The chart used to delineate the seawater conditions and designated use classification segments is the National Oceanic and Atmospheric Administration - U.S. Department of Commerce, United States, East Coast, Rhode Island - Massachusetts, Narragansett Bay. National Chart Catalog No. 1, Panel G, 48th Ed., May 30, 1992, 13221. True bearings are used in the narrative description of the water bodies.

The reference for the freshwaters for designated use classification segments described here is the United States Geographic Survey 7.5 Minute Series Topographic Quadrangle Maps at a scale of 1:24,000.

WATER QUALITY REGULATIONS

APPENDIX A

General

This waterbody classification listing is consistent with the geographical/numerical waterbody listing in the State of the State's Waters Report, also known as the 305(b) Report. To find the Classification for a specific waterbody, locate the associated waterbody ID number using Table 1 and Figure 1 (knowledge of the approximate location of the waterbody in the state is needed.) The waterbody descriptions and classifications are listed by drainage basin and in numerical order of waterbody ID number within each basin.

All major rivers and most secondary and tertiary stream tributaries, as well as most medium to large ponds (those that appear on the RIDEM Water Quality Standards Map at a scale of 1:106,000) are listed here. Refer below or to rule 8.C. of the regulations for further general water quality classification information.

Water Use Classification

All surface waters of the state have been categorized according to the water use classifications of rule 8.B of these regulations based on considerations of public health, recreation, propagation and protection of fish and wildlife, and economic and social benefit. Each class is identified by the most sensitive, and therefore governing, water uses to be protected. Surface waters may be suitable for other beneficial uses, but are regulated to protect and enhance the designated uses.

These water quality classifications (i.e. A, B, B1, SA, SB, or SB1) denote the water quality **goals** for the waterbody as listed below and in rule 8.B of the regulations, not the present conditions. Assessments of present water quality condition are made on a case-by-case basis through information from the most recent State of the State's Waters 305(b) Report and/or any other applicable data as approved by the Director. The 305(b) Report is developed biennially (in even-numbered years) by the RIDEM, Water Resources and distributed to all major Rhode Island public libraries. Reference copies are also available for review at the Rhode Island Department of Environmental Management, Water Resources, 235 Promenade Street, Providence.

The water use classifications are as follows:

Freshwaters

Class A - These waters are designated as a source of public drinking water supply, for primary and secondary contact recreational activities and for fish and wildlife habitat. They shall be suitable for compatible industrial processes and cooling, hydropower, aquacultural uses, navigation, and irrigation and other agricultural uses. These waters shall have good aesthetic value.

Class B - These waters are designated for fish and wildlife habitat and primary and secondary contact recreational activities. They shall be suitable for compatible industrial processes and cooling, hydropower, aquacultural uses, navigation, and irrigation and other agricultural uses. These waters shall have good aesthetic value.

Class B1 - These waters are designated for primary and secondary contact recreational activities and fish and wildlife habitat. They shall be suitable for compatible industrial processes and cooling, hydropower, aquacultural uses, navigation, and irrigation and other agricultural uses. These waters shall have good aesthetic value. Primary contact recreational activities may be impacted due to pathogens from approved wastewater discharges. However all Class B criteria must be met.

Class C - These waters are designated for secondary contact recreational activities and fish and wildlife habitat. They shall be suitable for compatible industrial processes and cooling, hydropower, aquacultural uses, navigation, and irrigation and other agricultural uses. These water shall have good aesthetic value.

Seawaters

Class SA - These waters are designated for shellfish harvesting for direct human consumption, primary and secondary contact recreational activities, and fish and wildlife habitat. They shall be suitable for aquacultural uses, navigation, and industrial cooling. These waters shall have good aesthetic value.

Class SB - These waters are designated for primary and secondary contact recreational activities; shellfish harvesting for controlled relay and depuration; and fish and wildlife habitat. They shall be suitable for aquacultural uses, navigation, and industrial cooling. These waters shall have good aesthetic value.

Class SB1 - These waters are designated for primary and secondary contact recreational activities and fish and wildlife habitat. They shall be suitable for aquacultural uses, navigation, and industrial cooling. These waters shall have good aesthetic value. Primary contact recreational activities may be impacted due to pathogens from approved wastewater discharges. However all Class SB criteria must be met.

Class SC - These waters are designated for secondary contact recreational activities, and fish and wildlife habitat. They shall be suitable for aquacultural uses, navigation, and industrial cooling. These waters shall have good aesthetic value.

Partial Uses

In accordance with rule 8.B.(3). of these regulations, the Department may assign a partial use subcategory to a waterbody segment where waters are affected by combined sewer overflows or mooring fields. A partial use designation may affect the application of criteria.

a. CSO - These waters will likely be impacted by combined sewer overflows in accordance with approved CSO Facilities Plans and in compliance with rule 19.E.1 of these regulations and the Rhode Island CSO Policy. Therefore, primary contact recreational activities; shellfishing uses; and fish and wildlife habitat will likely be restricted.

b. Concentration of Vessels - these waters are in the vicinity of marinas and/or mooring fields and therefore seasonal shellfishing closures will likely be required as listed in the most recent (revised annually) RIDEM document entitled Shellfish Closure Areas. For Class SA waters, all Class SA criteria must be attained at all times.

The following is a list of symbols use in the water quality classification listing:

- Located next to the Waterbody ID number, the # indicates a segment where the Water Effect Ratios (WERs) and Site Specific Criteria (See Appendix B) apply.

DWS - Located under the Waterbody ID number, DWS identifies public surface drinking water supplies.

{a} - Located next to the classification, {a} indicates a partial use designation due to impacts from CSOs.

{b} - Located next to the classification, {b} indicates a partial use designation due to impacts from a concentration of vessels.

General Water Quality Classification Rules

In accordance with rule 8.C. of these regulations:

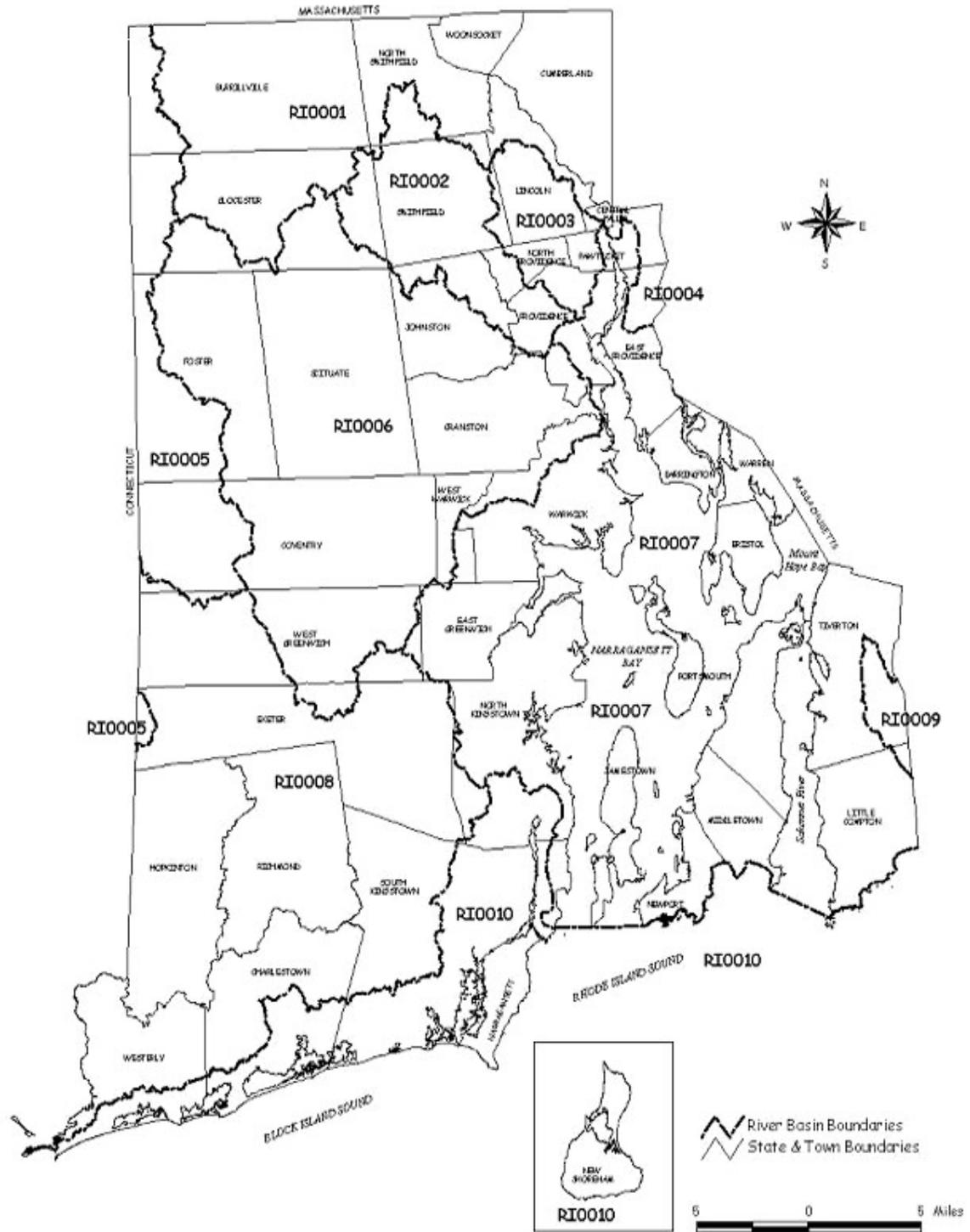
1. All streams tributary to Class A waters shall be Class A.
2. All freshwaters hydrologically connected by surface waters and upstream of Class B, SB, C or SC waters shall be Class B unless otherwise identified in Appendix A of these regulations.
3. All other fresh waters, including, but not limited to, ponds, kettleholes and wetlands not listed in Appendix A shall be considered to be Class A.
4. All seawaters not listed in Appendix A shall be considered to be Class SA. All saltwater and brackish wetlands contiguous to seawaters not listed in Appendix A shall be considered to be Class SA.
5. All saltwater and brackish wetlands contiguous to seawaters listed in Appendix A shall be considered the same class as their associated seawaters.

TABLE 1

Waterbody ID Numbers and Basin Locations

<u>Waterbody ID Number</u>	<u>Basin Name</u>
RI0001	Blackstone River
RI0002	Woonasquatucket River
RI0003	Moshassuck River
RI0004	Ten Mile River
RI0005	Thames River
RI0006	Pawtuxet River
RI0007	Narragansett Bay
RI0008	Pawcatuck River
RI0009	Westport River
RI0010	Coastal (Block Island Sound/Rhode Island Sound)

FIGURE 1. River Basin Locations



WATERBODY SEGMENT CLASSIFICATIONS

<u>WATERBODY ID</u>	<u>DESCRIPTION</u>	<u>CLASSIFICATION AND PARTIAL USES</u>
<u>BLACKSTONE RIVER DRAINAGE BASIN - RI0001001</u>		
RI0001001L DWS	Wallum Lake. Burrillville.	A
RI0001002	Clear River from Wallum Lake to a point 3/4 mile downstream. Burrillville.	A
RI0001002	Clear River from a point 3/4 mile downstream from Wallum Lake to a point 1/2 mile above Wilson Reservoir. Burrillville.	B1
RI0001002	Clear River from a point 1/2 mile above Wilson Reservoir in Burrillville to a point 1 mile upstream of the confluence with the Chepachet River. Burrillville.	B
RI0001002	Pascoag River and its headwaters (including ponds and reservoirs) and tributaries, to its confluence with the Clear River. Gloucester and Burrillville.	B
RI0001002	Nipmuc River including Round Top Brook, Chockalog River and tributaries from MA-RI border to the confluence with the Clear River. Burrillville.	A
RI0001002	Chepachet River and all tributaries, including Keech Pond, Smith and Sayles Reservoir, Sucker Pond, Steere's Pond and Spring Grove Pond, from headwaters to its confluence with the Clear and Branch Rivers. Gloucester and Burrillville.	B
RI0001002	Clear River from 1 mile upstream of the confluence with the Chepachet River to the confluence with the Chepachet. Burrillville.	B1
RI0001002	Tarkiln Brook, Tarkiln Pond and tributaries to its entrance into Slatersville Reservoir. Burrillville, Gloucester, and North Smithfield.	B
RI0001002	Branch River from confluence of Clear River and Chepachet River at Oakland to Slatersville Reservoir. Burrillville and North Smithfield.	B
RI0001002L	Slatersville Reservoir and the Branch River from the reservoir to the confluence with the Blackstone River. Burrillville and North Smithfield.	B
RI0001003	Blackstone River from MA-RI border to the CSO outfall located at River and Samoset Streets in Central Falls. Woonsocket, North Smithfield, Cumberland, Lincoln and Central Falls.	B1
RI0001003	Blackstone River from the CSO outfall located at River and Samoset Streets in Central Falls to the Slater Mill Dam. Central Falls and Pawtucket.	B1{a}
RI0001003	Mill River and Peters River from the MA-RI border to confluence with the Blackstone River. Woonsocket.	B
RI0001003L	Scott Pond and tributaries. Lincoln.	B

WATERBODY SEGMENT CLASSIFICATIONS

<u>WATERBODY ID</u>	<u>DESCRIPTION</u>	<u>CLASSIFICATION AND PARTIAL USES</u>
RI0001003	West Sneeck Brook from a point 1/4 mile downstream of Sneeck Pond to the confluence with the Blackstone River. Cumberland.	B
RI0001003	Cherry Brook. North Smithfield and Woonsocket.	B
RI0001003	Monastery Brook to confluence with the Blackstone River. Cumberland.	B
RI0001004 DWS	Crookfall Brook, including Woonsocket Reservoir No. 3 and its headwaters. North Smithfield and Smithfield.	A
RI0001005 DWS	East Sneeck Brook, including Sneeck Pond, to Arnold Mills (Pawtucket) Reservoir. Cumberland.	A
RI0001006 DWS	Abbott Run Brook, including Arnold Mills (Pawtucket) Reservoir, Diamond Hill Reservoir and all tributaries to the MA-RI border. Cumberland.	A
RI0001006 DWS	Abbott Run Brook, from the MA-RI border to confluence with the Blackstone River, including Robin Hollow and Happy Hollow Ponds. Cumberland.	A

WOONASQUATUCKET RIVER DRAINAGE BASIN

RI0002007	Woonasquatucket River and headwaters and tributaries, including the Stillwater River, Waterman Reservoir, Stillwater Reservoir, Sprague and Lower Sprague Reservoirs, Slack Reservoir, Mountindale Reservoir, Stillwater Pond and Georgiaville Pond, to Esmond Mill Drive in Smithfield. Gloucester, Smithfield, North Smithfield and Johnston.	B
RI0002007	Woonasquatucket River from Esmond Mill Drive in Smithfield to the CSO outfall located at Glenbridge Avenue in Providence. Smithfield, North Providence, Johnston and Providence.	B1
RI0002007	Woonasquatucket River from the CSO outfall located at Glenbridge Avenue in Providence to the confluence with the Providence River. Providence.	B1{a}

MOSHASSUCK RIVER BASIN

RI0003008	Moshassuck River from its headwaters, including Bleachery and Barney Ponds, to the CSO outfall located at Higgenson Avenue in Central Falls. Lincoln and Central Falls.	B
RI0003008L	Olney Pond. Lincoln and Smithfield. Lincoln Woods State Park.	B
RI0003008	Moshassuck River from the CSO outfall located at Higgenson Avenue in Central Falls to its confluence with the Providence River. Central Falls, Pawtucket, and Providence.	B{a}
RI0003008	West River, including Wenscott Reservoirs, to the CSO outfall located at Vandewater Street near Branch Avenue in Providence. Lincoln, Smithfield, North Providence and Providence.	B

WATERBODY SEGMENT CLASSIFICATIONS

<u>WATERBODY ID</u>	<u>DESCRIPTION</u>	<u>CLASSIFICATION AND PARTIAL USES</u>
RI0003008	West River from the CSO outfall located at Vandewater Street near Branch Avenue in Providence to its confluence with the Moshassuck River. Providence.	B{a}
<u>TEN MILE RIVER BASIN</u>		
RI0004009	Ten Mile River, including Central Pond, from MA-RI border to Newman Avenue Dam in East Providence. East Providence and Pawtucket.	B1
RI0004009	Ten Mile River from the Newman Avenue Dam, including Turner Reservoir, to the confluence with the Seekonk River below Omega Pond. East Providence.	B
RI0004009	Seven Mile River from MA-RI border to confluence with the Ten Mile River Pawtucket.	B
<u>THAMES RIVER BASIN</u>		
RI0005047	Five Mile River and tributaries, including Keach, Mary Brown, Cady and Shady Oak (aka Mowry Meadow) Brooks and Peck Pond; Lake Washington and Clarkesville Pond. Burrillville and Gloucester.	B
RI0005047L	Bowdish Reservoir. Gloucester.	B
RI0005047	Croff Farm Brook to RI-CT border. Burrillville.	B
RI0005047	Blackmore Brook, including Cedar Swamp Pond and Wakefield Pond, to RI-CT border. Burrillville.	B
RI0005047	Whetstone Brook, including Killingly Pond, to RI-CT border. Gloucester/ Foster.	B
RI0005010L	Beach Pond. Exeter.	B
RI0005011	Moosup River and all tributaries and ponds, including Carbuncle, Clark, Briggs, Waterman, Arnold, Whitford, Little Grass and Great Grass Ponds. Foster, Coventry and West Greenwich.	A
<u>PAWTUXET RIVER BASIN</u>		
RI0006012	Big River and all tributaries including Nooseneck, Congdon and Carr Rivers; Carr, Tarbox, Millbrook and all other ponds of the Big River system from headwaters to Flat River Reservoir and including the southernmost section of Flat River Reservoir (Reynolds Pond) to the Harkney Hill Road Highway Bridge in Coventry. Exeter, West Greenwich and Coventry.	A
RI0006013L	Flat River Reservoir north of the Harkney Hill Road highway bridge to the Flat River Reservoir Dam including Johnsons' Pond, Maple Root Pond, Quidneck Reservoir and Coventry Reservoir (Stump Pond) and all other tributaries and ponds of the Flat River Reservoir system. Coventry and Scituate.	B

WATERBODY SEGMENT CLASSIFICATIONS

<u>WATERBODY ID</u>	<u>DESCRIPTION</u>	<u>CLASSIFICATION AND PARTIAL USES</u>
RI0006014	South Branch of the Pawtuxet River from the Flat River Reservoir dam to the Quidnick Dye Mill Dam in Coventry including all tributaries. Coventry.	B
RI0006014#	South Branch of the Pawtuxet River from the Quidnick Dye Mill Dam in Coventry to its confluence with the Pawtuxet River, main stem. Coventry and West Warwick.	B1
RI0006014L	Tiogue Lake. Coventry.	B
RI0006015L DWS	Scituate Reservoir and all tributaries, ponds and reservoirs within the watershed thereto and the North Branch of the Pawtuxet River to 1/2 mile downstream of the Gainer Memorial Dam (Rt. 12) in Scituate. Scituate, Foster, Gloucester, Smithfield and Johnston.	A
RI0006016	North Branch Pawtuxet River from 1/2 mile downstream of the Gainer Memorial Dam (Rt. 12) to the Fiskeville Dam in Scituate. Scituate and Coventry.	B
RI0006016	Clarke Brook, including Curran Upper and Lower Reservoirs to its confluence with the North Branch of the Pawtuxet River. Cranston and Scituate.	B
RI0006016	North Branch of the Pawtuxet River from the Fiskeville Dam to the confluence of the North and South Branches of the Pawtuxet River at Riverpoint. Scituate, Coventry, West Warwick and Cranston.	B
RI0006017#	The Pawtuxet River from the confluence of the North and South Branches of the Pawtuxet at Riverpoint to the Pawtuxet Cove Dam at Pawtuxet. West Warwick, Warwick and Cranston.	B1
RI0006017	Meshanticut Brook, including tributaries and ponds to its confluence with the Pawtuxet River. Cranston and Warwick.	B
RI0006017	Three Ponds Brook and Three Ponds to its confluence with the Pawtuxet River. Cranston and Warwick.	B
RI0006017	Mashapaug Brook from the outfall at Spectacle Pond, including Mashapaug, Fenner B and Bellefont Ponds and all ponds in Roger Williams Park, to its confluence with the Pawtuxet River. Cranston and Providence.	B
RI0006017L	Spectacle Pond. Cranston	B
RI0006017	Aldrich Brook to its confluence with the Pawtuxet River. Cranston.	B
RI0006018	Dry Brook, including Oak Swamp and Almy Reservoirs, to a point 0.3 miles below Almy Reservoir. Johnston.	B
RI0006018	Dry Brook from a point 0.3 miles below Almy Reservoir to its confluence with the Pocasset River. Johnston.	B1
RI0006018	Pocasset River and tributaries including Simmons Reservoirs and Randall, Dyer and Print Works Ponds to the Print Works Pond discharge. Johnston, Providence and Cranston.	B

WATERBODY SEGMENT CLASSIFICATIONS

<u>WATERBODY ID</u>	<u>DESCRIPTION</u>	<u>CLASSIFICATION AND PARTIAL USES</u>
RI0006018	Pocasset River from the discharge of Print Works Pond to confluence with the Pawtuxet River. Cranston.	B
<u>NARRAGANSETT BAY BASIN</u>		
RI0007019	Seekonk River from the Slater Mill Dam at Main Street in Pawtucket to India Point in Providence. Pawtucket and Providence.	SB1{a}
RI0007020	Providence River from its confluence with the Moshassuck and Woonasquatucket Rivers in Providence south to a line extending from a point on shore due east of Naushon Avenue in Warwick to the western terminus of Beach Road in East Providence, including Watchemocket Cove. East Providence, Providence, Cranston and Warwick.	SB1{a}
RI0007020	Providence River south of a line from a point on shore due east of Naushon Avenue in Warwick to the western terminus of Beach Road in East Providence and north of a line from Gaspee Point in Warwick to Bullock Point in East Providence. East Providence and Warwick.	SB{a}
RI0007020	Providence River south of a line from Gaspee Point in Warwick to Bullock Point in East Providence and north of a line from Conimicut Point in Warwick to Old Tower at Nayatt Point in Barrington. East Providence, Warwick and Barrington.	SB{a}
RI0007021	Runnins River from the MA-RI border to the Mobil Dam in East Providence. East Providence.	B
RI0007021	Barrington River from the Mobil Dam in East Providence to the East Bay Bike Path trestle in Barrington approximately 1000 feet north of the confluence with the Warren River. East Providence and Barrington.	SA
RI0007022	Palmer (aka Upper Warren) River from the MA-RI border to the East Bay Bike Path trestle in Warren approximately 1000 feet north of the confluence with the Barrington River. Warren/Barrington.	SA
RI0007023	Warren River, including the southernmost reaches of the Barrington and Palmer Rivers, from the East Bay Bike Path trestles south to a line between the concrete jetty at the north end of the Warren Town Beach through Nun Buoy 18 and its extension to the Barrington Shore. Barrington/Warren.	SB1
RI0007023	Warren River south of a line from the concrete jetty at the north end of the Warren Town Beach through Nun Buoy 18 and its extension to the Barrington Shore and north of a line from Adams Point in Barrington to Jacobs Point in Warren. Warren/Barrington.	SB
RI0007024	Upper Narragansett Bay, from the Conimicut Point-Nayatt Point boundary south, including waters south of a line from Adams Point in Barrington to Jacobs Point in Warren, to a line extending from Warwick Point in Warwick through Providence Point on Prudence Island to Popasquash Point in Bristol. Warwick, Barrington, Bristol, Portsmouth and Warren.	SA

WATERBODY SEGMENT CLASSIFICATIONS

<u>WATERBODY ID</u>	<u>DESCRIPTION</u>	<u>CLASSIFICATION AND PARTIAL USES</u>
RI0007024	Upper Narragansett Bay in the vicinity of North Farm on the Bay south of a line from the northernmost extremity of the breakwater at the North Farm marina easterly to the shore, and east and north of the breakwater at the North Farm marina (5 acres). Bristol.	SA
RI0007024S	Buckeye Brook and Warwick Pond. Warwick.	B
RI0007024S	Mussachuck Creek, including Brickyard Pond and Echo Lake, to its confluence with the Providence River. Barrington.	B
RI0007025	Greenwich Bay - main body waters west and north of a line extending from Warwick Point in Warwick to Sandy Point on Potowomut Neck, Warwick, including Brush Neck Cove and Buttonwoods Cove. Warwick, East Greenwich, North Kingstown.	SA
RI0007025	Inner Apponaug Cove, north of Buoy "C" 7. Warwick.	SB
RI0007025	Outer Apponaug Cove, south of Buoy "C" 7 and northwest of a line extending from Cedar Tree Point on the east shore to the end of Neptune Avenue on the west shore. Warwick.	SB
RI0007025L/S	Gorton Pond and Hardig Brook. Warwick.	B
RI0007025	Warwick Cove north of a line from the easternmost extension of Suburban Parkway SB at Oakland Beach to the westernmost extension of Meadow Avenue on the east shore. Warwick.	
RI0007025	Greenwich Cove south of Long Point. East Greenwich and Warwick.	SB1
RI0007025	Greenwich Cove north of Long Point and west of a line extending from the northerly point of Long Point to the southerly point of Chepianoxet Peninsula. Warwick and East Greenwich.	SB
RI0007026	Bristol Harbor - waters north of a line extending from Popasquash Point to the northernmost extremity of Hog Island and west of a line from the northernmost extremity of Hog Island to the northernmost indentation of the harbor and south of a line from Rockwell's Dock on Popasquash Neck to the Premier Thread Company water tower on the east shore of Bristol Harbor. Bristol.	SA
RI0007026	Bristol Harbor - waters north of a line extending from Rockwell's Dock on Popasquash Neck to the Premier Thread Company water tower on the east shore of Bristol Harbor and west of a line from the northernmost extremity of Hog Island to the northernmost indentation of the harbor. Bristol.	SA{b}
RI0007026	Bristol Harbor - waters east of a line extending from the northernmost indentation of Bristol Harbor to the northeast extremity of Hog Island and west of a line extending from Mckee's Wharf on Bristol Neck to the Coast Guard dock and north of a line extending from the northeast extremity of Hog Island to Mckee's Wharf on Bristol Neck. Bristol.	SB

WATERBODY SEGMENT CLASSIFICATIONS

<u>WATERBODY ID</u>	<u>DESCRIPTION</u>	<u>CLASSIFICATION AND PARTIAL USES</u>
RI0007026	Bristol Harbor - waters east of a line extending from McKee's Wharf north to the Coast Guard dock. Bristol.	SB1
RI0007027	Allen Harbor exclusive of the waters described immediately below. North Kingstown.	SA{b}
RI0007027	Allen Harbor waters, south and east of a line extending from the westernmost indentation of the cove which is immediately north of the easternmost curve of Westcott Road, North Kingstown, to the northernmost point of land on the south side of the mouth of Allen Harbor. North Kingstown.	SB
RI0007027	The waters in the vicinity of Piers No. 1 and No. 2 at the Davisville Depot that are south of a line from the northeast corner of Pier No. 2 (the more northerly pier at the Davisville Depot) to Nun Buoy 14, north of a line from the RI Department of Environmental Management range marker located on the bulkhead approximately 300 feet south of Pier No. 1 (the more southerly pier at the Davisville Depot) to Nun Buoy 12, including all waters between the above described lines that are west of a line and the extension of a line from the northeastern end of the bulkhead at Quonset State Airport through Nun Buoy 16. North Kingstown.	SB
RI0007027	The waters in the vicinity of Quonset Point within 1500 feet of shore from the western end of the carrier pier to a point 1000 feet north of Quonset Point. North Kingstown.	SB1
RI0007027	The waters in the vicinity of Quonset Point exclusive of those waters described above, north and east of the intersection of a line extending from Fourth Street, North Kingstown, southeast to the northeasternmost point on Fox Island and a line drawn from the Wickford Lighthouse to Buoy R 6, west of the line from Buoy R6 to Nun Buoy 10, south of the line from Nun Buoy 10 through F G Buoy 11 extended to the shore. North Kingstown.	SB
RI0007027	Fishing Cove and outer Wickford Harbor east of a line extending from the northern extremity of Big Rock Point to the southern extremity of Cornelius Island, and east and north of a line extending from the northern extremity of Cornelius Island to a point 1000 feet north of Calf Neck, and west of Sauga Point breakwater and a line from the light at the southern end of Sauga Point breakwater to the northern end of the Poplar Point breakwater. North Kingstown.	SA{b}
RI0007027	Wickford Harbor including Mill Cove and Mill Creek west of a line extending from the northern extremity of Big Rock Point to the southern extremity of Cornelius Island, and west and south of a line extending from the northern extremity of Cornelius Island to a point 1000 feet north of Calf Neck, and Mill Creek south of a line from the Camp Avenue culvert. North Kingstown.	SB
RI0007027S	Mill Creek from the Camp Avenue culvert north including Pine River. North Kingstown.	B
RI0007027	Wickford Cove. North Kingstown.	SB
RI0007027	Waters west of the mouth of Bissel Cove. North Kingstown.	SA

WATERBODY SEGMENT CLASSIFICATIONS

<u>WATERBODY ID</u>	<u>DESCRIPTION</u>	<u>CLASSIFICATION AND PARTIAL USES</u>
RI0007027S	Annaquatucket River, including Belleville Pond, Kettle Hole Pond and Secret Lake, to Boston Neck Road. North Kingstown.	B
RI0007027	The waters in the vicinity of South Ferry within 500 feet of the University of Rhode Island Narragansett Bay Marine Campus (9 acres). Narragansett.	SB
RI0007027	The waters in the vicinity of South Ferry Road, Narragansett, south of a line extending from the RI Department of Environmental Management range marker located approximately 1000 feet north of South Ferry Road to the Dutch Island Lighthouse and west of a line from the eastern extremity of Casey Point to the eastern extremity of Bonnet Shores and north of a line extending from the RI Department of Environmental Management range marker located approximately 1500 feet south of South Ferry Road to the northern extremity of Beaverhead. Narragansett and Jamestown.	SA
RI0007027	The waters in West Passage from a point on the shore of the western coast of Jamestown, which is due east of the Dutch Island pier to the Fort Getty pier and thence to a point at the southern terminus of Maple Avenue. Jamestown.	SA{b}
RI0007027	West Passage off Jamestown in the vicinity of West Ferry, south and east of a line from the western end of Watson Avenue to the extension of that line to the Dutch Island Light House and north and east of a line from the southwest corner of the Old Ferry dock to the northeast extremity of Dutch Island. Jamestown.	SA{b}
RI0007028	Fry Brook to the confluence of the Hunt River (1 1/2 miles). East Greenwich.	B
RI0007028	Upper reaches of the Hunt River and tributaries upstream of Frenchtown Road, including Mawney, Frenchtown and Scrabbletown Brooks. East Greenwich and North Kingstown.	A
RI0007028	Hunt River from Frenchtown Road to the tidal waters of the Potowomut River approximately 1000 feet south of the Forge Bridge. East Greenwich and North Kingstown.	B
RI0007028	Potowomut River (aka Greene River). East Greenwich/North Kingstown.	SA
RI0007029	Potter Cove, Prudence Island. Portsmouth	SA{b}
RI0007029	The waters within a 35 foot radius of the outfall from the boat building facility at Arnold Point. Portsmouth.	SA
RI0007029	Waters east of a line drawn from Coggeshall Point southwesterly to the southeasternmost point of Dyer Island and the area east of a line drawn from Carr Point northwesterly to the southeasternmost point of Dyer Island. Portsmouth.	SB1
RI0007029	Unnamed Brook from headwaters south of Greene Lane, Middletown, to Redwood Road, Portsmouth. Portsmouth and Middletown.	B
RI0007029	Unnamed Brook from Redwood Road, Portsmouth, to East Passage, Narragansett Bay. Portsmouth.	B1

WATERBODY SEGMENT CLASSIFICATIONS

<u>WATERBODY ID</u>	<u>DESCRIPTION</u>	<u>CLASSIFICATION AND PARTIAL USES</u>
RI0007029	Narragansett Bay waters within a 600 foot radius of Greene Lane, Middletown. Middletown.	SA
RI0007029	Waters in the vicinity of Taylor Point which are within a 300 foot radius of the Jamestown marine sewer outfall (7 acres). Jamestown.	SB1
RI0007029	The waters in the vicinity of Taylor Point, exclusive of those waters described above, south of a line extending from the northernmost extremity of Taylor Point to Can Buoy 13, north of a line from a point of land on the Jamestown shore approximately 1000 feet south of the Newport Bridge extending eastward to the northernmost extremity of Rose Island and within 1000 feet of the shoreline of Jamestown (49 acres). Jamestown.	SB
RI0007029	The waters in the vicinity of East Ferry west of a line from Bryer Point to Lincoln Street (61 acres). Jamestown.	SB
RI0007029	The waters in the vicinity of Wharton's Shipyard which are south and west of a line from a point of land approximately 3000 feet north of Bull Point to the northernmost of "The Dumplings", and west of a line from the northernmost of "The Dumplings" to a point of land approximately 1000 feet north of Bull Point (17 acres).	SB
RI0007029	The waters bound on the north by a line extending 1000 feet seaward from shore at the base of the Newport bridge; bound to the east by a line extending 1000 feet seaward of the shoreline and bound to the south by a line extending from Bull Point to buoy G "11", excluding the Class SB waters as described in the preceding two descriptions. Jamestown.	SA{b}
RI0007029	Waters in the vicinity of the Fort Wetherill Boat Basin that are west of the extension of a line from the southeast corner of the pier at Fort Wetherill, through the northeast corner of the pier at Fort Wetherill to the opposite northern shore. Jamestown.	SB
RI0007030	Waters in the vicinity of Coddington Cove south and east of line from the southwestern extremity of Coddington Point to the northernmost point of the Coddington Cove breakwater. Middletown.	SB
RI0007030	Waters in the vicinity of Newport Harbor east of a line from the Ida Lewis Yacht Club to the southern extremity of Goat Island, and east of a line from the northern extremity of Goat Island to the west shore of Coasters Harbor Island, east of a line from the west shore of Coasters Harbor Island to Bishop Rock. Newport.	SB
RI0007030	Waters in the vicinity of Fort Adams, Newport, which are within a 300 foot radius of the Fort Adams marine sewer outfall (4.1 acres). Newport.	SB1
RI0007030	Waters in the vicinity of Fort Adams, Newport, which are within a 600 foot radius of the Fort Adams marine sewer outfall, exclusive of the SB1 waters described above. Newport.	SB

WATERBODY SEGMENT CLASSIFICATIONS

<u>WATERBODY ID</u>	<u>DESCRIPTION</u>	<u>CLASSIFICATION AND PARTIAL USES</u>
RI0007030	Newport Harbor - east of a line from Fort Adams Light to Rose Island Light to buoy (FLR) Bell 14 and south of a line from Buoy (FLR) Bell 14 to Bishop Rock. Newport.	SB
RI0007030	Coddington Cove - waters north of a line from Buoy (FLR) Bell 14 to Bishop Rock and southeast of a line from Buoy (FLR) Bell 14 through Nun Buoy 16 at Coddington Point and its extension to the end (southeastern-most point) of the Coddington Cove breakwater. Newport.	SB
RI0007030	Waters in the vicinity of Coasters Harbor Island which are within 500 feet of the Newport marine sewer outfall (18 acres). Newport.	SB1
RI0007030	Waters within 500 feet of the firing pier at the U.S. Navy torpedo testing station at the northern end of Gould Island. Newport	SB
RI0007030	Castle Hill Cove. Newport	SB
RI0007032	Mt. Hope Bay south and west of the MA-RI border and north of a line from Borden's Wharf, Tiverton to Buoy R "4" and east of a line from Buoy R "4" to Brayton Point in Somerset, MA. Bristol, Portsmouth and Tiverton.	SB1
RI0007032	Mt. Hope Bay south of a line from Borden's Wharf, Tiverton, to Buoy R "4" and west of a line from Buoy R "4" to Brayton Point, Somerset, MA., and east of a line from the end of Gardiner's Neck Road in Swansea to Buoy N "2," through Buoy C "3" to Common Fence Point , Portsmouth; and north of a line from Portsmouth to Tiverton at the railroad bridge at "The Hummocks" on the northeast point of Portsmouth. Portsmouth and Tiverton.	SB
RI0007032	Mt. Hope Bay west of the SB zone described above to the Narrows at the entrance to the Kickamuit River and east of a line from shore to shore passing through the most westerly points of the two center piers of the Mt. Hope Bridge. Bristol and Portsmouth.	SA
RI0007033	Kickamuit River from the Child Street Bridge (Route 103) in Warren south to the river mouth at "Bristol Narrows". Bristol/Warren.	SA
RI0007034 DWS	Kickamuit River from the Child Street Bridge (Route 103) north to the RI-MA border, including the Kickamuit Reservoir (aka Warren Reservoir). Bristol/Warren.	A
RI0007035L DWS	Aquidneck Water Supply Reservoir System, including Gardiner, Nelson, Sisson, St. Mary's, and Nonquit (Tiverton) Ponds; Lawton Valley (Portsmouth) and H.E. Watson (Little Compton) Reservoirs; Paradise Brook and all tributaries thereto. Portsmouth, Middletown, Newport, Tiverton and Little Compton.	A
RI0007035L DWS	Green End (North Easton) Pond and (South) Easton Pond and all tributaries thereto including Bailey Brook. Middletown/Newport.	A
RI0007036L DWS	Jamestown Water Supply - Jamestown Reservoir and South Pond, including Jamestown Brook. Jamestown.	A

WATERBODY SEGMENT CLASSIFICATIONS

<u>WATERBODY ID</u>	<u>DESCRIPTION</u>	<u>CLASSIFICATION AND PARTIAL USES</u>
RI0007037L DWS	Tiverton Water Supply - Stafford Pond and tributaries. Tiverton.	A
<u>PAWCATUCK RIVER BASIN</u>		
RI0008039	Pawcatuck River from Worden Pond to the dam at Kenyon. South Kingstown and Charlestown.	B
RI0008039	Pawcatuck River from the dam at Kenyon to 1 1/2 miles downstream of the Horseshoe Falls Dam at Shannock. Richmond and Charlestown.	B1
RI0008039	Pawcatuck River, from 1 1/2 miles downstream of the Horseshoe Falls dam at Shannock to the outfall of the Bradford Dye treatment lagoon at the northeast corner of Kedinker Island, including Indian Cedar Swamp and brook, Poquiant Brook and Watchaug Pond. Charlestown and Westerly.	B
RI0008039	Pawcatuck River from the outfall of the Bradford Dye treatment lagoon at the northeast corner of Kedinker Island to the Route 3 highway bridge. Hopkinton and Westerly.	B1
RI0008039	Pawcatuck River from the Route 3 highway bridge to the dam at White Rock. Hopkinton and Westerly.	B
RI0008039	Pawcatuck River from the dam at White Rock to the Route 1 highway bridge, at the junction of Main Street and Broad Street. Westerly.	B
RI0008038E	Pawcatuck River from the Route 1 highway bridge to Pawcatuck Rock. Westerly.	SB1
RI0008038E	Pawcatuck River from Pawcatuck Rock to a line from Rhodes Point to Pawcatuck Point. Westerly.	SB
RI0008038E	Little Narragansett Bay west of a line extending from Pawcatuck Point to Rhodes Point excluding the area described below. Westerly.	SA
RI0008038E	Little Narragansett Bay and Watch Hill Cove southeast of a line from the northernmost extension of land that forms Napatree Point to the westernmost point of land on the south side of the mouth of Fosters Cove. Westerly.	SA{b}
RI0008039	White Horn Brook to Kingston Road (Route 138). South Kingstown.	A
RI0008039	White Horn Brook from Kingston Road (Route 138) to the wetlands associated with and due east of Worden Pond. South Kingstown.	B
RI0008039L	Worden Pond. South Kingstown.	B
RI0008039	Chipuxet River to the Yawgoo Mill Pond dam including the unnamed tributary to the Chipuxet south of the dam. Exeter and North Kingstown.	A

WATERBODY SEGMENT CLASSIFICATIONS

<u>WATERBODY ID</u>	<u>DESCRIPTION</u>	<u>CLASSIFICATION AND PARTIAL USES</u>
RI0008039	Chipuxet River from the Yawgoo Mill Pond dam to its entrance into Worden Pond, including Hundred Acre Pond. Exeter and South Kingstown.	B
RI0008039	Chickasheen Brook to Yawgoo Pond. Exeter.	A
RI0008039	Chickasheen Brook from, and including, Yawgoo Pond to its confluence with the Usquepaug River including Barber Pond. Exeter and South Kingstown.	B
RI0008039	Fisherville Brook and tributaries including Pendock, Dutemple and Sodom Brooks to the confluence with the Queen River. Exeter and West Greenwich.	A
RI0008039	Queens Fort Brook to 3/4 mile south of Victory Highway (Route 102). Exeter.	A
RI0008039	Queens Fort Brook from 3/4 mile south of Victory Highway (Route 102) to the confluence with the Queen River. Exeter.	B
RI0008039	Queen River from headwaters south to its entrance into Bear Swamp in Exeter. West Greenwich and Exeter.	A
RI0008039	Queen River from its entrance into Bear Swamp to its confluence with Queens Fort Brook. Exeter.	B1
RI0008039	Queen River from its confluence with Queens Fort Brook, including Glen Rock Reservoir and Usquepaug River, to the confluence with the Pawcatuck River. Exeter, Richmond and South Kingstown.	B
RI0008039L	Pasquiset Pond and Pasquiset Brook to the confluence with the Pawcatuck River. Charlestown.	A
RI0008039	Beaver River to its confluence with the Pawcatuck River. Exeter and Richmond.	A
RI0008039	Meadow Brook to its confluence with the Pawcatuck River. Richmond.	A
RI0008039L	Watchaug Pond and Poquiant Brook to its confluence with the Pawcatuck River. Charlestown.	B
RI0008039	Tomaquaug Brook to its confluence with the Pawcatuck River. Hopkinton.	A
RI0008039L	Chapman Pond and Aguntaug Brook to its confluence with the Pawcatuck River. Westerly.	B
RI0008039	Ashaway River from headwaters south to the Ashaway Road highway bridge. Hopkinton.	A
RI0008039	Ashaway River from the Ashaway Road highway bridge to its confluence to the Pawcatuck River. Hopkinton.	B

WATERBODY SEGMENT CLASSIFICATIONS

<u>WATERBODY ID</u>	<u>DESCRIPTION</u>	<u>CLASSIFICATION AND PARTIAL USES</u>
RI0008040	Roaring Brook, including Boon Lake and Browning Mill Pond, to its confluence with the Wood River. West Greenwich, Exeter, Richmond and Hopkinton.	B
RI0008040	Wood River and tributaries including Breakheart Brook, Acid Factory Brook, Flat River, Fall River, and Parris Brook and Breakheart, Tillinghast, Hazard, Wickaboxet and Tippecansett Ponds to the confluence with Roaring Brook. West Greenwich, Exeter, Richmond and Hopkinton.	A
RI0008040	Wood River from the confluence with Roaring Brook to the dam at Wyoming. Richmond and Hopkinton.	B
RI0008040	Wood River from the dam at Wyoming to 3/4 mile downstream from the confluence with Moscow Brook. Richmond/Hopkinton.	B
RI0008040	Wood River from 3/4 mile downstream of the confluence with Moscow Brook to its confluence with the Pawcatuck River. Richmond/Hopkinton.	B
RI0008040	Brushy Brook from headwaters to Sawmill Road. Exeter and Hopkinton.	A
RI0008040L	Grassy Pond and Grassy Brook to its entrance into Winchek Pond. Hopkinton.	A
RI0008040L DWS	Yawgoog Pond. Hopkinton.	A
RI0008040	Moscow Brook, including Yawgoog, Winchek and Locustville Ponds, to the confluence with the Wood River. Hopkinton.	B
RI0008040	Conanchet Brook, from and including Ashville and Blue Pond to the confluence with the Wood River. Hopkinton.	B

WESTPORT RIVER BASIN

RI0009041	Adamsville Brook to the RI-MA border. Tiverton and Little Compton.	B
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COASTAL WATERS

RI0010031	Sakonnet River from the railroad bridge at the Hummocks (northeast end of Aquidneck Island) south to the Stone Bridge on Almy Neck in Portsmouth and its extension from the Tiverton shore. Portsmouth and Tiverton.	SB
RI0010031	Sakonnet River from the Stone Bridge in Portsmouth/Tiverton south to a line at the mouth of the river extending from Sachuest Point in Middletown to Sakonnet Point in Little Compton, including all coastal waters, Nannaquaket Pond and The Cove in Island Park excluding the marina area described below. Portsmouth, Middletown, Tiverton and Little Compton.	SA

WATERBODY SEGMENT CLASSIFICATIONS

<u>WATERBODY ID</u>	<u>DESCRIPTION</u>	<u>CLASSIFICATION AND PARTIAL USES</u>
RI0010031	Sakonnet Harbor south of a line from the light at the end of the Sakonnet break-water to the point of land at the end of Goodrich Lane, Little Compton, on the eastern shore of the harbor. Little Compton	SA{b}
RI0010031	Sin and Flesh Brook to Fish Street. Tiverton.	B1
RI0010031	Sin and Flesh Brook from Fish Street to Main Road (Route 77). Tiverton.	B
RI0010031	Sakonnet River off the east shore of Portsmouth in the vicinity of Elmhurst Academy. Portsmouth.	SA
RI0010031	Sakonnet River off the east shore of Portsmouth south and west of a line from the RI Department of Environmental Management range marker located approximately 1000 feet north of the eastern end of Sherwood Terrace, Portsmouth, to Can Buoy 7 and north and west of a line from the RIDEM range marker located just north of McCorrie Point to Nun Buoy 10 (25 acres). Portsmouth.	SA
RI0010042	Waters east of Tucker's Dock which are within a 500 foot radius of the South Kingstown/Narragansett Regional Wastewater Treatment Facility outfall (18 acres). Narragansett.	SB1
RI0010042	Waters in the vicinity of Tucker's Dock, exclusive of those waters described described above, within 2500 feet of any point on the shoreline between Continental Road and Hazard Avenue (207 acres). Narragansett.	SB
RI0010042	Waters in the vicinity of Scarborough within 500 feet of the Narragansett-Scarborough marine sewer outfall located approximately 2000 feet (bearing 133°) from a point of land at the northern boundary of Fort Nathaniel Greene (18 acres). Narragansett.	SB1
RI0010042	Waters in the vicinity of Scarborough that are more than 500 feet but less than 1500 feet away from the marine sewer outfall located approximately 2000 feet (bearing 133 degrees) from a point of land at the northern boundary of Fort Nathaniel Greene (144 acres). Narragansett.	SB
RI0010043	Southwestern coastal ponds - including Point Judith, Potter, Trustom, Card, Green Hill, Ninigret, Quonochontaug, Winnapaug, and Maschaug Ponds in Washington County excluding the marina areas described below. Narragansett, South Kingstown, Charlestown and Westerly.	SA
RI0010043	Waters in the vicinity of the Billington Cove Marina, Point Judith Pond, as shown on the plan entitled "Billington Cove Marina: Marina Perimeter Plan", dated August 1994 by Coastal Engineering Group, Inc., east of a line from the western edge of the rip-rap retaining wall, 221 feet seaward, and west of a line from the flagpole, 280 feet seaward, and north of the line that connects these two lines. South Kingstown.	SA{b}
RI0010043	Upper Point Judith Pond from the mouth of the Saugatucket River at the Main Street Dam in Wakefield downstream to Can Buoy 33 (43 acres). Narragansett and South Kingstown.	SB

WATERBODY SEGMENT CLASSIFICATIONS

<u>WATERBODY ID</u>	<u>DESCRIPTION</u>	<u>CLASSIFICATION AND PARTIAL USES</u>
RI0010043	Point Judith Pond in the vicinity of Galilee within 500 feet of the shore from the northern end at the breachway to the western side of the Great Island Road bridge. Narragansett.	SB
RI0010043	Waters in the vicinity of Jerusalem within 500 feet of the shore from the breachway to a point approximately 1000 feet north of the State Pier (23 acres). Narragansett.	SB
RI0010043	Waters in the vicinity of Snug Harbor within 500 feet of shore from Gooseberry Road to High Point (24 acres). South Kingstown.	SB
RI0010044	Pettaquamscutt (Narrow) River headwaters including Silver Spring Lake, Mattatuxet River, Shady Lea Pond and Carr Pond. North Kingstown.	B
RI0010044	Gilbert Stuart Stream from the Carr Pond outlet to the Pettaquamscutt (Narrow) River. North Kingstown.	A
RI0010044	Pettaquamscutt (Narrow) River exclusive of the waters noted below, south to the mouth of the river including Pettaquamscutt Cove. North Kingstown, South Kingstown and Narragansett.	SA
RI0010044	Waters in the vicinity of the marina at Middle Bridge. Narragansett.	SA{b}
RI0010045	Saugatucket River and all tributaries, including Indian Lake, Indian Run Reservoir, Saugatucket Pond, Asa Pond, Peacedale Reservoir and Fresh Meadow Brook, Rocky Brook and Indian Run to the Main Street Dam in Wakefield. South Kingstown.	B
RI0010046	Great Salt Pond, New Shoreham, south of a line from the northern most extremity of Cormorant Point to the northern most landward dock located at the Block Island Club. Block Island.	SA{b}
RI0010046	Great Salt Pond exclusive of the waters described above. Block Island.	SA
RI0010046	Waters within a 500 foot radius of the New Shoreham marine sewer outfall. (12 acres). Block Island.	SB1
RI0010046	The waters exclusive of the waters described above, which are within 1000 feet from shore from a point 1000 feet north of the New Shoreham marine sewer outfall to a point 1000 feet south of the marine sewer outfall (31 acres).	SB
RI0010046	The waters in the vicinity of Old Harbor west of a line from the fixed red light at the end of the northern breakwater to the seaward end of the southern breakwater (23 acres).	SB
RI0010046L DWS	Fresh Pond and Sands Pond. Block Island.	A
RI0010048	Southeastern freshwater coastal ponds including Watch House, Round, Long, and Simmons Ponds. Little Compton.	A

WATERBODY SEGMENT CLASSIFICATIONS

<u>WATERBODY ID</u>	<u>DESCRIPTION</u>	<u>CLASSIFICATION AND PARTIAL USES</u>
RI0010048	Southeastern coastal ponds including Quicksand and Tunipus Ponds, and Sapowet and Briggs Marshes. Tiverton and Little Compton.	SA
RI001048S	Southeastern coastal pond streams including Borden, Patchet, Almy, Sisson and Cold Brooks. Tiverton and Little Compton.	A
RI0010048	Dundery Brook to Meetinghouse Lane. Little Compton.	B
RI0010048	Dundery Brook from Meetinghouse Lane to 1 mile downstream of Meetinghouse Lane. Little Compton.	B1
RI0010048	Dundery Brook from 1 mile downstream of Meetinghouse Lane to Briggs Marsh (1 mile). Little Compton.	B
	All other seawaters of Narragansett Bay, Sakonnet River, Rhode Island Sound Block Island Sound, Rhode Island portions of Mount Hope Bay and coastal ponds not delineated above.	SA

RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
WATER RESOURCES

APPENDIX B

**RIDEM AMBIENT WATER QUALITY
CRITERIA AND GUIDELINES FOR TOXIC POLLUTANTS**

Promulgated: August 6, 1997
Amended: March 25, 1999
Amended June 23, 2000

WATER QUALITY REGULATIONS

APPENDIX B

I. General

Section 304(a)(1) of the Federal Clean Water Act (CWA) requires the USEPA to develop and publish water quality criteria. The USEPA has published criteria for a number of the pollutants listed pursuant to Section 307(a)(1) of the CWA, as well as for other toxic substances, based on available toxicological information on the pollutants. Section 303(c)(2)(B) of the CWA, as amended by the Water Quality Act of 1987, requires states to adopt numeric criteria to protect the uses of their waters from all toxic pollutants listed pursuant to Section 307(a)(1) for which criteria have been published pursuant to Section 304(a)(1), and which are present, or could reasonably be expected to be present, at levels that would impair the uses. This Appendix contains the ambient chemical-specific numeric criteria and guidelines for aquatic life and human health which satisfies the requirements of Section 303(c)(2)(B).

Table 1 contains the acute and chronic aquatic life criteria and minimum data base guidelines for freshwater and saltwater and two sets of human health criteria. In Table 1, the first column of human health criteria represents criteria applicable to waters designated as public drinking water supplies, where the potential for water and fish consumption exists. The second column under human health represents criteria applicable to all other waters, where the designated route of exposure is due only to fish consumption.

For parameters which have both aquatic life and human health criteria or guidelines, the applicable criteria or guideline is determined by using the more stringent of the aquatic life or human health criteria or guidelines, according to the use of the waterbody.

Aquatic life criteria may be subject to site-specific modification procedures, as referenced in rules 8.D.(2) and 8.D.(3) of these Regulations, in accordance with RIDEM's most current "Site-Specific Aquatic Life Water Quality Criteria Development Policy" and EPA's "Determination and Use of WERS for Metals, EPA-823-B-94-001, February 1994. Aquatic life guidelines may be modified by adding to the database following the procedures outlined on page B-4 of this Appendix. Human health criteria are subject to site-specific criteria development utilizing the methodology in the EPA guidance manual, "Assessing Human Health Risk from Chemically-Contaminated Fish and Shellfish" (EPA - 503/8-89-002), and the methodology published in the Federal Register on November 28, 1980 (45 FR 79347) entitled "Water Quality Criteria Documents; Availability, Appendix C - Guidelines and Methodology used in Preparation of Health Effect Assessment Chapters of the Consent Decree Water Criteria Documents", or the most recent EPA documentation.

In addition to these criteria and guidelines, Table 5 of this Appendix contains a complete list of "priority pollutants."

II. Aquatic Life Criteria

The aquatic life criteria in Table 1 represents the EPA water quality criteria for the protection of aquatic life, pursuant to Section 304(a) of the CWA, for acute and chronic exposure to toxics in freshwater and saltwater. These toxics are priority metals, organics, pesticides, PCBs and cyanide. To protect aquatic life, the one hour average concentration of a pollutant should not exceed the acute criteria more than once every three years on the average. An exclusion to this rule are the pesticides and PCBs acute criteria which are considered instantaneous values (See footnote \$ to Table 1). The four day average

concentration of a pollutant should not exceed the chronic criteria more than once every three years on the average. These aquatic life criteria shall be achieved in all waters, except mixing zones, regardless of the waters' classification.

The acute and chronic aquatic life criteria for freshwaters shall not be exceeded at or above the lowest average 7 consecutive day low flow with an average recurrence frequency of once in 10 years (7Q10). For non-flowing freshwaters, the acute and chronic aquatic life criteria shall not be exceeded under the most adverse conditions which will be determined on a case-by case basis.

The acute and chronic aquatic life criteria for seawater shall not be exceeded beyond the boundary of the mixing zone(s), as defined and determined by rules 8.D.(1).e. and 8.D.(1).f. of the Water Quality Regulations, and thence throughout the waterbody. If a mixing zone has not been established, these criteria shall not be exceeded in any portion of the receiving water.

For purposes of calculating freshwater aquatic life criteria for metals from the equations in Table 2, the minimum hardness allowed for use in those equations shall be 25 mg/l, as calcium carbonate, even if the actual ambient hardness is less than 25 mg/l as calcium carbonate. The hardness values used shall be consistent with the design flow conditions established in rules 8.D. and 8.E. of the Regulations. For waters in which the salinity is equal to or less than one part per thousand, the applicable criteria are the freshwater criteria. For waters in which the salinity is equal to or greater than ten parts per thousand, the applicable criteria are the saltwater criteria. For waters in which the salinity is between one and ten parts per thousand, the applicable criteria are the more stringent of the freshwater or saltwater criteria. However, for those waters between one and ten parts per thousand, the Department may deviate from the general rule if scientifically defensible information and data demonstrates that on a site-specific basis the biology of the waterbody is dominated by freshwater aquatic life and that freshwater criteria are more appropriate; or conversely, the biology of the waterbody is dominated by saltwater aquatic life and that saltwater criteria are more appropriate.

The acute and chronic freshwater criteria for 10 metals and the acute and chronic saltwater criteria for 11 metals listed in Table 1 are presented as dissolved metal criteria (see footnotes #5 and #6 on Table 1). For these metals, the dissolved metal, as opposed to the total recoverable metal, more closely approximates the bioavailable fraction of the metal in the water column. The conversion factors (CF) to calculate dissolved metal from total metal concentrations as listed in footnotes #5 and #6 are based on current EPA guidance (Office of Water Policy and Technical Guidance on Interpretation and Implementation of Aquatic Life Metals Criteria, October 1, 1993; "Derivation of Correction Factors for the Calculation of Dissolved Freshwater Aquatic Life Criteria for Metals", Stephan, USEPA, March 31, 1995; "Derivation of Conversion Factors for the Calculation of Dissolved Saltwater Aquatic Life Criteria for Metals", USEPA, March 31, 1995; Federal Register, Vol. 60, No. 68, Thursday May 4, 1995, p. 22228-22237) and are subject to change as more data becomes available. The following formulas are used for calculating dissolved metals criteria:

$$\text{Acute Criteria}_{\text{dissolved}} = \text{Acute Criteria}_{\text{total recoverable}} \times \text{Acute Conversion Factor}$$

$$\text{Chronic Criteria}_{\text{dissolved}} = \text{Chronic Criteria}_{\text{total recoverable}} \times \text{Chronic Conversion Factor}$$

It should be noted that the chronic saltwater and chronic freshwater criteria for mercury are presented as total recoverable because the mercury criteria is based on mercury residues in aquatic organisms rather than toxicity. The saltwater criteria for Copper are based on new data outlined in current EPA guidance ("Ambient Water Quality Criteria - Copper, Addendum EPA 1995"; and Federal Register, Vol. 60, No. 68, Thursday, May 4, 1995, p. 22228-22237).

III. Site Specific Criteria

Section 131.11(b)(1)(ii) of the Federal water quality standards regulation provides States with the opportunity to adopt water quality criteria that are modified to reflect local environmental conditions. Following the procedures outlined in RIDEM's "Site Specific Aquatic Life Water Quality Criteria Development Policy", as amended, and EPA's "Interim Guidance on Determination and Use of Water-Effect Ratios for Metals", (February 1994, EPA-823-B-94-001), acute Water Effect Ratios (WERs) were developed for 5 metals; cadmium, copper, lead, silver and zinc (Table 4). The WER procedure provides for the use of a WER that is intended to take into account relevant differences between the toxicities of the chemical in laboratory dilution water and in site water. These WERs are then used to derive acute site specific criteria from the State aquatic life criteria as indicated in Table 4. Chronic site specific criteria are then calculated using the derived acute site specific criteria, as indicated in Table 4. The "RI Site Specific Criteria Development Policy" and the WER procedures were applied using total recoverable metals and therefore, the calculated site specific criteria are in the form of total recoverable metals. The conversion factors for converting total recoverable metal criteria to dissolved metal criteria cannot be applied to these site specific criteria.

The criteria derived from these WERs (Table 4), and therefore not the criteria listed in Tables 1 and 2, apply to the segments of the Pawtuxet River classified as B1 (see Appendix A).

IV. Freshwater Minimum Data Base Guidelines

RIDEM has derived freshwater guidelines for many pollutants for which EPA water quality criteria are not available. In order for guidelines to be derived, the toxicity data base for the pollutants must meet minimum requirements. These guidelines are given in Table 1 and are marked with an asterisk (*).

The data base must contain at least two acute toxicity test results expressed as either an EC₅₀ or an LC₅₀ as specified in the EPA Water Quality Criteria Guidelines (45 FR 79343, 1980 and amendments). "LC₅₀" is defined as the concentration of a test material in a suitable diluent at which 50 percent of the exposed organisms die during a specified time period. "EC₅₀" is defined as the concentration of a test material in a suitable diluent at which 50 percent of the exposed organisms exhibit a specified response during a specified time period.

The two acute toxicity test results shall consist of:

1. One daphnid (D. magna or D. pulex)
2. One fish, either:
 - (a) fathead minnow (Pimephales promelas)
 - (b) bluegill (Lepomis macrochirus)
 - (c) rainbow trout (Salmo gairdneri)

For every pollutant which meets these minimum data requirements, acute and chronic guidelines are derived using the following equations:

$$\text{Lowest LC}_{50} \text{ or EC}_{50} \times 0.05 = \text{Acute Guideline}$$

$$\text{Acute Guideline} \div 45 = \text{Chronic Guideline}$$

The uncertainty factor, 0.05, is intended to provide an adequate margin of safety to protect most aquatic organisms from acutely toxic effects. The uncertainty factor was selected by calculating uncertainty factor guidelines for those pollutants with EPA Water Quality Criteria. These guidelines were most similar to the EPA Water Quality Criteria when an uncertainty factor of 0.05 was used.

The acute guideline is divided by an acute to chronic ratio of 45 to yield the chronic guideline. This ratio was derived by the State of Michigan using all available acute to chronic values for priority pollutant tests performed on freshwater species. It was determined that 80% of the pollutants would have a geometric mean acute to chronic ratio of 45 or less.

V. Human Health Criteria

The human health criteria in Table 1 represent the EPA water quality criteria which would not result in a significant risk to public health. For almost all of the pollutants, bioaccumulation properties are used to assess the relative extent of human exposure to the pollutant either directly through ingestion or indirectly through consumption of aquatic organisms. As research continues on reference dose factors and cancer potency factors, new or updated human health criteria may be established by EPA and utilized by RIDEM. These new or updated human health criteria are maintained in EPA's electronic database known as Integrated Risk Information System (IRIS).

Ambient water quality criteria for human health are primarily based on two types of biological endpoints: (1) carcinogenicity and; (2) toxicity (i.e., all other adverse effects other than cancer). There are essentially two procedures for assessing health effects; one which addresses carcinogens and one which addresses non-carcinogens. The reason for having two methodologies is that, for the purpose of deriving ambient water quality criteria, carcinogenicity is regarded as a non-threshold phenomenon, whereas toxicity is regarded as having a threshold below which there will not be an effect. For those toxic substances which are identified as carcinogens, the criteria have been established at a risk level of 10^{-5} assuming a lifetime exposure to a 70 kg male consuming 6.5 grams per day of fish and shellfish product and ingesting 2.0 liters of water per day. For those toxic substances which are identified as non-carcinogens, the human health criteria are best estimates of concentrations which are not expected to produce adverse effects in human health assuming a lifetime exposure of a 70 kg male consuming 6.5 grams per day of fish and shellfish products and ingesting 2.0 liters of water per day.

These criteria represent the chronic criteria necessary to protect human health. Non-carcinogen human health criteria are developed assuming that effects occur after days or weeks of exposure. It is assumed that, up to a certain point, the body's natural defense mechanisms can adequately protect the exposed organ(s). Therefore, the design flow to be utilized for freshwater non-carcinogen criteria is the lowest average thirty consecutive day low flow with an average recurrence frequency of once in five years (30Q5). Freshwater carcinogenic criteria are developed assuming exposure over a lifetime (70 years). The design flow to be used with these criteria is the harmonic mean flow which is a long term mean flow value calculated by dividing the number of daily flows analyzed by the sum of the reciprocals of those daily flows. For non-flowing freshwaters, the human health criteria shall not be exceeded under the most adverse conditions which will be determined on a case-by case basis. For seawaters, the ambient human health water quality criteria for carcinogens and non-carcinogens are applicable when the most adverse hydrographic and pollution conditions occur at the particular point of evaluation.

VI. Priority Pollutants Without Criteria or Guidelines

Any pollutant listed on the most recent EPA priority pollutant list published in accordance with Section 307(a)(1) of the Clean Water Act (Table 5 of this Appendix) or additional criteria EPA has established for non-priority pollutants, for which there is no RIDEM ambient water quality criteria or guideline, shall be regulated in accordance with rules 8.D.(2) and 8.D.(3) of the Regulations.

Table 1. RIDEM Ambient Water Quality Criteria and Guidelines.

CHEMICAL NAME	AQUATIC LIFE CRITERIA (µg/l)				CARCINOGEN ?	HUMAN HEALTH CRITERIA (µg/l) ²	
	FRESHWATER		SALTWATER			Class A waters - Water and Fish Consumption	All other waters- Fish Consumption Only
	ACUTE	CHRONIC	ACUTE	CHRONIC			
ACENAPHTHENE	85*	1.9*	-	-	no	1200	2700
ACROLEIN	2.9*	0.06*	-	-	no	320	780
ACRYLONITRILE	378*	8.4*	-	-	yes	0.59	6.6
ALDRIN	3.0 [§]	-	1.3 [§]	-	yes	1.3 ng/l	1.4 ng/l
ALUMINUM	750 [■]	87 [■]	-	-		-	-
AMMONIA	#	#	#	#	no	-	-
ANTIMONY	450*	10*	-	-	no	14	4300
ARSENIC ^{5,6}	360	190	69	36	yes	50	50
ASBESTOS	-	-	-	-	yes	7x10 ⁶ fibers/l	
BENZENE	265*	5.9*	-	-	yes	12	710
BENZIDINE	-	-	-	-	yes	1.2 ng/l	5.4 ng/l
BERYLLIUM	7.5*	0.17*	-	-	yes	-	-
CADMIUM ^{5,6}	@	@	42	9.3	no	-	-
CARBON TETRACHLORIDE	1365*	30*	-	-	yes	2.5	44
CHLORDANE	2.4 [§]	0.0043	0.09 [§]	0.004	yes	5.7 ng/l	5.9 ng/l
CHLORINE	19	11	13	7.5			
CHLORINATED BENZENES							
CHLOROBENZENE	795*	18*	-	-	no	680	21 mg/l
HEXACHLOROBENZENE	-	-	-	-	yes	7.5 ng/l	7.7 ng/l
1,2,4-trichlorobenzene	75*	1.7*	-	-		-	-
1,2,3,5-tetrachlorobenzene	321*	7.1*	-	-		-	-
pentachlorobenzene	13*	0.28*	-	-		-	-
CHLORINATED ETHANES							
1,2-DICHLOROETHANE	5900*	131*	-	-	yes	3.8	990
1,1,1-TRICHLOROETHANE	-	-	-	-	no	-	-

Table 1. RIDEM Ambient Water Quality Criteria and Guidelines.

CHEMICAL NAME	AQUATIC LIFE CRITERIA				CARCINOGEN ?	HUMAN HEALTH CRITERIA	
	(µg/l)					Class A waters - Water and Fish Consumption	All other waters- Fish Consumption Only
	FRESHWATER		SALTWATER				
	ACUTE	CHRONIC	ACUTE	CHRONIC			
1,1,2-TRICHLOROETHANE	900*	20*	-	-	yes	6.0	420
HEXACHLOROETHANE	49*	1.1*	-	-	yes	19	89
1,1,2,2-TETRACHLOROETHANE	466*	10*	-	-	yes	1.7	110
1,1,1,2-TETRACHLOROETHANE	980*	22*	-	-		-	-
PENTACHLOROETHANE	362*	8.0*	-	-		-	-
CHLORINATED PHENOLS							
2,4,6-TRICHLOROPHENOL	16*	0.36*	-	-	yes	21	65
2-CHLOROPHENOL	-	-	-	-	no	120	400
4-CHLOROPHENOL	192*	4.3*	-	-		-	-
2,4,5-TRICHLOROPHENOL	23*	0.51*	-	-		-	-
2,3,4,6-TETRACHLOROPHENOL	7*	0.16*	-	-		-	-
2,3,5,6-TETRACHLOROPHENOL	8.5*	0.19*	-	-		-	-
4-CHLORO-2-METHYLPHENOL	15*	0.32*	-	-		-	-
2,4-DICHLORO-6-METHYLPHENOL	22*	0.48*	-	-		-	-
CHLOROALKYL ETHERS							
BIS(2-CHLOROETHYL)ETHER	-	-	-	-	yes	0.31	14
BIS(2-CHLOROISOPROPYL)ETHER	-	-	-	-	no	1400	170 mg/l
CHLOROFORM	1445*	32*	-	-	yes	57	4700
1-CHLORONAPHTHALENE	80*	1.8*	-	-		-	-
2-CHLORONAPHTHALENE	-	-	-	-	no	1700	4800
2-CHLOROPHENOL	129*	2.9*	-	-	no	-	-
CHROMIUM III ⁵	@	@	-	-	no	-	-
CHROMIUM VI ^{5,6}	15	10	1100	50	no	-	-
COPPER ^{5,6}	@	@	4.8	3.1	no	1300	-

Table 1. RIDEM Ambient Water Quality Criteria and Guidelines.

CHEMICAL NAME	AQUATIC LIFE CRITERIA				CARCINOGEN ?	HUMAN HEALTH CRITERIA	
	(µg/l)					Class A waters - Water and Fish Consumption	All other waters- Fish Consumption Only
	FRESHWATER		SALTWATER				
	ACUTE	CHRONIC	ACUTE	CHRONIC			
CYANIDE	22	5.2	1.0	1.0	no	700	220 mg/l
4,4-DDT	1.1 ^s	0.001	0.13 ^s	0.001	yes	5.9 ng/l	5.9 ng/l
4,4-DDE	-	-	-	-	yes	5.9 ng/l	5.9 ng/l
4,4-DDD	-	-	-	-	yes	8.3 ng/l	8.4 ng/l
DICHLOROBENZENES							
1,2-DICHLOROBENZENE	79*	1.8*	-	-	no	2700	17 mg/l
1,3-DICHLOROBENZENE	390*	8.7*	-	-	no	400	2600
1,4-DICHLOROBENZENE	56*	1.2*	-	-	no	400	2600
DICHLOROBENZIDINES							
3,3-DICHLOROBENZIDENE	-	-	-	-	yes	0.40	0.77
DICHLOROETHYLENES							
1,1-DICHLOROETHYLENE	580*	13*	-	-	yes	0.57	32
2,4-DICHLOROPHENOL	101*	2.2*	-	-	no	93	790
1,3-DICHLOROPROPYLENE	-	-	-	-	no	10	1700
DIELDRIN	2.5 ^s	0.0019	0.71 ^s	0.0019	yes	1.4 ng/l	1.4 ng/l
1,2-TRANS-DICHLOROETHYLENE	-	-	-	-	no	700	-
2,4-DIMETHYLPHENOL	106*	2.4*	-	-	no	540	2300
DICHLOROPROPANES							
1,1-DICHLOROPROPANE	1150*	26*	-	-	-	-	-
1,2-DICHLOROPROPANE	2625*	58*	-	-	yes	5.2	390
1,3-DICHLOROPROPANE	303*	6.7*	-	-	-	-	-
DINITROTOLUENES							
2,4-DINITROTOLUENE	1550*	34*	-	-	yes	1.1	91
2,3-DINITROTOLUENE	17*	0.37*	-	-	-	-	-

Table 1. RIDEM Ambient Water Quality Criteria and Guidelines.

CHEMICAL NAME	AQUATIC LIFE CRITERIA				CARCINOGEN ?	HUMAN HEALTH CRITERIA	
	(µg/l)					Class A waters - Water and Fish Consumption	All other waters- Fish Consumption Only
	FRESHWATER		SALTWATER				
	ACUTE	CHRONIC	ACUTE	CHRONIC			
2,3,7,8-TCDD (Dioxin)	-	-	-	-	yes	0.00000013	0.00000014
1,2-DIPHENYLHYDRAZINE	14*	0.31*	-	-	yes	0.40	5.4
ENDOSULFAN (alpha, beta)	0.22 ^S	0.056	0.034 ^S	0.0087	no	0.93	2.0
ENDOSULFAN (sulfate)	-	-	-	-	no	0.93	2.0
ENDRIN	0.18 ^S	0.0023	0.037 ^S	0.0023	no	0.76	0.81
ENDRIN ALDEHYDE	-	-	-	-	no	0.76	0.81
ETHYLBENZENE	1600*	36*	-	-	no	3100	29 mg/l
FLUORANTHENE	199*	4.4*	-	-	no	300	370
HALOMETHANES							
BROMOFORM	1465*	33*	-	-	yes	43	3600
BROMOMETHANE (methyl bromide)	-	-	-	-	no	48	4000
CHLORODIBROMOMETHANE	-	-	-	-	yes	4.1	340
CHLOROMETHANE (methyl chloride)	-	-	-	-	yes	-	-
METHYLENE CHLORIDE	9650*	214*	-	-	yes	47	16 mg/l
DICHLOROBROMOMETHANE	-	-	-	-	yes	2.7	220
4-BROMOPHENYL PHENYL ETHER	18*	0.4*	-	-		-	-
HEPTACHLOR	0.52 ^S	0.0038	0.053 ^S	0.0036	yes	2.1 ng/l	2.1 ng/l
HEPTACHLOR EPOXIDE	0.52 ^S	0.0038	0.053 ^S	0.0036	yes	1.0 ng/l	1.1 ng/l
HEXACHLOROBUTADIENE	-	-	-	-	yes	4.4	500
HEXACHLOROCYCLOPENTADIENE	0.35*	0.008*	-	-	no	240	17000
HEXACHLOROCYCLOHEXANE							
Alpha BHC	-	-	-	-	yes	39 ng/l	130 ng/l
Beta BHC	-	-	-	-	yes	140 ng/l	460 ng/l
Gamma BHC (Lindane)	2 ^S	0.08	0.16 ^S	-	yes	190 ng/l	630 ng/l

Table 1. RIDEM Ambient Water Quality Criteria and Guidelines.

CHEMICAL NAME	AQUATIC LIFE CRITERIA				CARCINOGEN ?	HUMAN HEALTH CRITERIA		
	(µg/l)						(µg/l) ²	
	FRESHWATER		SALTWATER				Class A waters - Water and Fish Consumption	All other waters- Fish Consumption Only
	ACUTE	CHRONIC	ACUTE	CHRONIC				
ISOPHORONE	5850*	130*	-	-	yes	84	6000	
LEAD ^{5,6}	@	@	210	8.1	no	-	-	
MERCURY ^{5,6}	2.1	0.0122	1.8	0.025	no	0.14	0.15	
NICKEL ^{5,6}	@	@	74	8.2	no	610	4600	
NAPHTHALENE	115*	2.6*	-	-		-	-	
NITROBENZENE	1350*	30*	-	-	no	17	1900	
NITROPHENOLS								
2,4-DINITROPHENOL	31*	0.69*	-	-	no	70	14 mg/l	
4,6-DINITRO-2-METHYL PHENOL (4,6-dinitro-o-cresol)	-	-	-	-	no	13.4	765	
4-NITROPHENOL	-	-	-	-		-	-	
2,4,6-TRINITROPHENOL	4235	94	-	-		-	-	
2,4-DINITRO-6-METHYL PHENOL	12	0.26	-	-		-	-	
NITROSAMINES								
N-NITROSODI-N-PROPYLAMINE	-	-	-	-	yes	0.05	14.0	
N-NITROSODIMETHYLAMINE	-	-	-	-	yes	6.9 ng/l	81	
N-NITROSODIPHENYLAMINE	293*	6.5*	-	-	yes	50	160	
PENTACHLOROPHENOL	@	@	13	7.9	yes	2.8	82	
PHENOL	251*	5.6*	-	-	no	21 mg/l	4600mg/l	
PHTHALATE ESTERS								
BUTYL BENZYL PHTHALATE	85*	1.9*			no	3000	5200	
BIS(2-ETHYLHEXYL)PHTHALATE	555*	12*	-	-	yes	18	59	
DI-n-BUTYL PHTHALATE	-	-	-	-	no	2700	12 mg/l	
DIETHYL PHTHALATE	2605*	58*	-	-	no	23 mg/l	120 mg/l	

Table 1. RIDEM Ambient Water Quality Criteria and Guidelines.

CHEMICAL NAME	AQUATIC LIFE CRITERIA				CARCINOGEN ?	HUMAN HEALTH CRITERIA	
	(µg/l)					Class A waters - Water and Fish Consumption	All other waters- Fish Consumption Only
	FRESHWATER		SALTWATER				
	ACUTE	CHRONIC	ACUTE	CHRONIC			
DIMETHYL PHTHALATE	1650*	37*	-	-	no	313 mg/l	2.9 g/l
POLYCHLORINATED BIPHENYLS ³	-	0.014	-	0.03	yes	0.44 ng/l	0.44 ng/l
POLYCYCLIC AROMATIC HYDROCARBONS ⁴	-	-	-	-	yes	0.028	0.31
ANTHRACENE	-	-	-	-	no	9600	110 mg/l
FLUORENE	-	-	-	-	no	1300	14000
PYRENE	-	-	-	-	no	960	11 mg/l
SELENIUM ⁶	20	5	290	71	no	-	-
SILVER ^{5,6}	@	-	1.9	-	no	-	-
TETRACHLOROETHYLENE	240*	5.3*	-	-	yes	8.0	88.5
THALLIUM	46*	1.0*	-	-	no	1.7	6.3
TOLUENE	635*	14*	-	-	no	6800	200 mg/l
TOXAPHENE	0.73	0.0002	0.21	0.0002	yes	7.3 ng/l	7.5 ng/l
TRICHLOROETHYLENE	1950*	43*	-	-	yes	27	810
VINYL CHLORIDE	-	-	-	-	yes	20	5250
ZINC ^{5,6}	@	@	90	81	no	-	-

Table 1. RIDEM Ambient Water Quality Criteria and Guidelines.

KEY:

* = RIDEM minimum database guidelines.

■ = Freshwater criteria for aluminum are for waters in which the pH is between 6.5 and 9.

= See Table 3 for ammonia criteria

@ = see Table 2 for criteria equations

- = No criteria recommendation.

\$ = The aquatic life criteria for these compounds were issued in 1980 utilizing the 1980 Guidelines for criteria development. The acute values shown are final acute values which, by the 1980 Guidelines, are instantaneous values as contrasted with a Criteria Maximum Concentration (CMC) which is a one-hour average.

¹ = carcinogens calculated at 10⁻⁵ risk

² = criteria are in µg/l unless otherwise noted

µg/l = micrograms/liter

ng/l = nanograms/liter

mg/l = milligrams/liter

³ = Polychlorinated Biphenyls criteria apply

to each of the following:

PCB 1016 PCB 1248 PCB 1242 PCB 1232

PCB 1254 PCB 1260 PCB 1221

⁴ = Polycyclic Aromatic Hydrocarbons criteria apply to each of the following:

indeno(1,2,3-cd)pyrene

dibenzo(ah)anthracene

benzo(a)anthracene

benzo(a) pyrene

benzo(b)fluoranthene

benzo(k)fluoranthene

chrysene

(Key is continued on next page)

Table 1. RIDEM Ambient Water Quality Criteria and Guidelines.

Key (continued):

⁵ = Freshwater values in Table 1 for the following parameters represent dissolved criteria using the EPA recommended conversion factors (CF), as listed below:

<u>Metal</u>	<u>Acute CF</u>	<u>Chronic CF</u>
Arsenic	1.000	1.000
Cadmium	$1.136672 - [(\ln H) \times 0.041838]$	$1.101672 - [(\ln H) \times 0.041838]$
Chromium III	0.316	0.86
Chromium VI	0.982	0.962
Copper	0.96	0.96
Lead	$1.46203 - [(\ln H) \times 0.145712]$	$1.46203 - [(\ln H) \times 0.145712]$
Mercury	0.85	N/A (see Note below)
Nickel	0.998	0.997
Silver	0.85	(no freshwater criteria)
Zinc	0.978	0.986

NOTE: (ln H) = natural log of Hardness, using any hardness as appropriate.
 N/A = chronic criteria for mercury cannot be converted to dissolved because it is based on mercury residues in aquatic organisms rather than toxicity.

⁶ = Saltwater values in Table 1 for the following parameters represent dissolved criteria using the EPA recommended conversion factors, as listed below:

<u>Metal</u>	<u>Conversion Factor</u>
Arsenic	1.000
Cadmium	0.994
Chromium III	(no saltwater criteria)
Chromium VI	0.993
Copper	0.83
Lead	0.951
Mercury	0.85 (see Note below)
Nickel	0.990
Selenium	0.998
Silver	0.85
Zinc	0.946

NOTE: Conversion factors on this table were calculated for acute criteria only. Conversion factors for chronic criteria are not currently available. In the absence of chronic conversion factors saltwater acute conversion factors are used. Chronic criteria for mercury cannot be converted to dissolved because it is based on mercury residues rather than toxicity.

Table 2. Freshwater Criteria Equations and Base e Exponential Values

Parameter	ACUTE (µg/l)			CHRONIC (µg/l)		
	$CF \times e^{(m_a [\ln \text{Hardness}] + b_a)}$			$CF \times e^{(m_c [\ln \text{Hardness}] + b_c)}$		
	CF =	m _a =	b _a =	CF =	m _c =	b _c =
Cadmium	@	1.128	-3.828	@	0.7852	-3.49
Chromium III	0.316	0.8190	3.688	0.86	0.819	1.561
Copper	0.96	0.9422	-1.464	0.96	0.8545	-1.465
Lead	#	1.273	-1.46	#	1.273	-4.705
Nickel	0.998	0.846	3.3612	0.997	0.846	1.1645
Silver	0.85	1.72	-6.52	-	-	-
Zinc	0.978	0.8473	0.8604	0.986	0.8473	0.7614
Pentachlorophenol*	-	1.005	-4.83	-	1.005	-5.29

- Hardness values are in mg/l as CaCO₃

- = no recommended value

- Lowest Hardness to be used with these equations is **25 mg/l** as CaCO₃

@ = Cadmium Conversion Factors:

acute CF = 1.136672 - [(ln H) x 0.041838]

chronic CF = 1.101672 - [(ln H) x 0.041838]

* substitute pH for hardness in the equations for pentachlorophenol

= Lead Conversion Factors:

acute and chronic CF = 1.46203 - [(ln H) x 0.145712]

CF = Conversion Factor to calculate dissolved metal from total metal concentrations

[ln H] = natural log of hardness

EXAMPLE:

If you wish to calculate the acute criteria for Copper at a hardness of 30 mg/l, the equation value for m_a = 0.9422, b_a = -1.464, and CF = 0.96 from Table 2.

The acute criteria equation for dissolved Copper is therefore:

$$0.96 \times e^{(0.9422[\ln 30] + (-1.464))} = 5.47$$

Result : The acute criteria for Dissolved Copper at a hardness of 30 mg/l is = 5.47 µg/l

Table 3 Ammonia Criteria

A. Freshwater

1. Acute Criteria as Total Ammonia Nitrogen (mg N/L)

pH	Acute Criterion with Salmonids present	Acute Criterion with Salmonids absent
6.5	32.6	48.8
6.6	31.3	46.8
6.7	29.8	44.6
6.8	28.1	42.0
6.9	26.2	39.1
7.0	24.1	36.1
7.1	22.0	32.8
7.2	19.7	29.5
7.3	17.5	26.2
7.4	15.4	23.0
7.5	13.3	19.9
7.6	11.4	17.0
7.7	9.65	14.4
7.8	8.11	12.1
7.9	6.77	10.1
8.0	5.62	8.40
8.1	4.64	6.95
8.2	3.83	5.72
8.3	3.15	4.71
8.4	2.59	3.88
8.5	2.14	3.20
8.6	1.77	2.65
8.7	1.47	2.20
8.8	1.23	1.84
8.9	1.04	1.56
9.0	0.885	1.32

Table 3. Ammonia Criteria

A. Freshwater

2. Chronic Criteria for Fish Early Life Stages Present, mg N/L

Temperature and pH-Dependent Values of the Chronic Criterion for Fish Early Life Stages Present										
pH	Temperature, C									
	0	14	16	18	20	22	24	26	28	30
6.5	6.67	6.67	6.06	5.33	4.68	4.12	3.62	3.18	2.80	2.46
6.6	6.57	6.57	5.97	5.25	4.61	4.05	3.56	3.13	2.75	2.42
6.7	6.44	6.44	5.86	5.15	4.52	3.98	3.50	3.07	2.70	2.37
6.8	6.29	6.29	5.72	5.03	4.42	3.89	3.42	3.00	2.64	2.32
6.9	6.12	6.12	5.56	4.89	4.30	3.78	3.32	2.92	2.57	2.25
7.0	5.91	5.91	5.37	4.72	4.15	3.65	3.21	2.82	2.48	2.18
7.1	5.67	5.67	5.15	4.53	3.98	3.50	3.08	2.70	2.38	2.09
7.2	5.39	5.39	4.90	4.31	3.78	3.33	2.92	2.57	2.26	1.99
7.3	5.08	5.08	4.61	4.06	3.57	3.13	2.76	2.42	2.13	1.87
7.4	4.73	4.73	4.30	3.78	3.32	2.92	2.57	2.26	1.98	1.74
7.5	4.36	4.36	3.97	3.49	3.06	2.69	2.37	2.08	1.83	1.61
7.6	3.98	3.98	3.61	3.18	2.79	2.45	2.16	1.90	1.67	1.47
7.7	3.58	3.58	3.25	2.86	2.51	2.21	1.94	1.71	1.50	1.32
7.8	3.18	3.18	2.89	2.54	2.23	1.96	1.73	1.52	1.33	1.17
7.9	2.80	2.80	2.54	2.24	1.96	1.73	1.52	1.33	1.17	1.03
8.0	2.43	2.43	2.21	1.94	1.71	1.50	1.32	1.16	1.02	0.897
8.1	2.10	2.10	1.91	1.68	1.47	1.29	1.14	1.00	0.879	0.773
8.2	1.79	1.79	1.63	1.43	1.26	1.11	0.973	0.855	0.752	0.661
8.3	1.52	1.52	1.39	1.22	1.07	0.941	0.827	0.727	0.639	0.562
8.4	1.29	1.29	1.17	1.03	0.906	0.796	0.700	0.615	0.541	0.475
8.5	1.09	1.09	0.990	0.870	0.765	0.672	0.591	0.520	0.457	0.401
8.6	0.920	0.920	0.836	0.735	0.646	0.568	0.499	0.439	0.386	0.339
8.7	0.778	0.778	0.707	0.622	0.547	0.480	0.422	0.371	0.326	0.287
8.8	0.661	0.661	0.601	0.528	0.464	0.408	0.359	0.315	0.277	0.244
8.9	0.565	0.565	0.513	0.451	0.397	0.349	0.306	0.269	0.237	0.208
9.0	0.486	0.486	0.442	0.389	0.342	0.300	0.264	0.232	0.204	0.179

Table 3. Ammonia Criteria

A. Freshwater (continued)

3. Chronic Criteria for Fish Early Life Stages Absent, mg N/L

Temperature and pH-Dependent Values of the CCC (Chronic Criterion) for Fish Early Life Stages Absent										
pH	Temperature, C									
	0-7	8	9	10	11	12	13	14	15*	16*
6.5	10.8	10.1	9.51	8.92	8.36	7.84	7.35	6.89	6.46	6.06
6.6	10.7	9.99	9.37	8.79	8.24	7.72	7.24	6.79	6.36	5.97
6.7	10.5	9.81	9.20	8.62	8.08	7.58	7.11	6.66	6.25	5.86
6.8	10.2	9.58	8.98	8.42	7.90	7.40	6.94	6.51	6.10	5.72
6.9	9.93	9.31	8.73	8.19	7.68	7.20	6.75	6.33	5.93	5.56
7.0	9.60	9.00	8.43	7.91	7.41	6.95	6.52	6.11	5.73	5.37
7.1	9.20	8.63	8.09	8.58	7.11	6.67	6.25	5.86	5.49	5.15
7.2	8.75	8.20	7.69	7.21	6.76	6.34	5.94	5.57	5.22	4.90
7.3	8.24	7.73	7.25	6.79	6.37	5.97	5.60	5.25	4.92	4.61
7.4	7.69	7.21	6.76	6.33	5.94	5.57	5.22	4.89	4.59	4.30
7.5	7.09	6.64	6.23	5.84	5.48	5.13	4.81	4.51	4.23	3.97
7.6	6.46	6.05	5.67	5.32	4.99	4.68	4.38	4.11	3.85	3.61
7.7	5.81	5.45	5.11	4.79	4.49	4.21	3.95	3.70	3.47	3.25
7.8	5.17	4.84	4.54	4.26	3.99	3.74	3.51	3.29	3.09	2.89
7.9	4.54	4.26	3.99	3.74	3.51	3.29	3.09	2.89	2.71	2.54
8.0	3.95	3.70	3.47	3.26	3.05	2.86	2.68	2.52	2.36	2.21
8.1	3.41	3.19	2.99	2.81	2.63	2.47	2.31	2.17	2.03	1.91
8.2	2.91	2.73	2.56	2.40	2.25	2.11	1.98	1.85	1.74	1.63
8.3	2.47	2.32	2.18	2.04	1.91	1.79	1.68	1.58	1.48	1.39
8.4	2.09	1.96	1.84	1.73	1.62	1.52	1.42	1.33	1.25	1.17
8.5	1.77	1.66	1.55	1.46	1.37	1.28	1.20	1.13	1.06	0.990
8.6	1.49	1.40	1.31	1.23	1.15	1.08	1.01	0.951	0.892	0.836
8.7	1.26	1.18	1.11	1.04	0.976	0.915	0.858	0.805	0.754	0.707
8.8	1.07	1.01	0.944	0.885	0.829	0.778	0.729	0.684	0.641	0.601
8.9	0.917	0.86	0.806	0.756	0.709	0.664	0.623	0.584	0.548	0.513
9.0	0.790	0.740	0.694	0.651	0.610	0.572	0.536	0.503	0.471	0.442

At 15 C and above, the criterion for fish ELS absent is the same as the criterion for fish ELS present.

NOTE:

1. Averaging Periods and Frequency of Exceedances

Chronic Criteria - The ambient concentration, averaged over a period of 30 days, shall not exceed the chronic criterion more than once every three years on average. The highest four-day average ambient concentration should not exceed a concentration 2.5 times greater than the chronic criterion.

Acute Criteria - The ambient concentrations, averaged over one hour shall not exceed the acute criterion more than once every three years on average.

Early Life Stage Absent (ELS-Absent) Provision

This provision allows for a relaxation of the chronic criteria when early life stages (ELS) of fish are not present, since, at low ambient water temperatures, adult and juvenile fish are less sensitive to ammonia toxicity than are early life stages of fish. In accordance with EPA's guidance, *1999 Update of Ambient Water Quality Criteria for Ammonia*, it is appropriate to relax the ammonia chronic criterion, as ambient water temperature decreases, in waterbodies where it is determined, to the Director's satisfaction, that early life stages are not present. The chronic criteria applicable when ELS are absent are found in Table 3.A.3. The Director has determined that the ELS-Absent Provision applies, but is not limited, to:

- ii. The entire Blackstone River during the period November 1 to April 30.
- iii. The main stem of the Pawtuxet River during the period November 1 to April 30.
- iv. The Woonasquatucket River from Georgiaville Pond to the confluence with the Moshassuck River during the period November 1 to April 30.

Table 3 continued

B. Saltwater: criteria as total ammonia (mg/l)

1. Acute Water Quality Criteria for Saltwater Aquatic Life Based on Total Ammonia (mg/l).
(To convert these values to mg/liter N, multiply by 0.822).

		Temperature (°C)							
		0	5	10	15	20	25	30	35
pH	Salinity = 10 g/kg								
7.0	270	191	131	92	62	44	29	21	
7.2	175	121	83	58	40	27	19	13	
7.4	110	77	52	35	25	17	12	8.3	
7.6	69	48	33	23	16	11	7.7	5.6	
7.8	44	31	21	15	10	7.1	5.0	3.5	
8.0	27	19	13	9.4	6.4	4.6	3.1	2.3	
8.2	18	12	8.5	5.8	4.2	2.9	2.1	1.5	
8.4	11	7.9	5.4	3.7	2.7	1.9	1.4	1.0	
8.6	7.3	5.0	3.5	2.5	1.8	1.3	0.98	0.75	
8.8	4.6	3.3	2.3	1.7	1.2	0.92	0.71	0.56	
9.0	2.9	2.1	1.5	1.1	0.85	0.67	0.52	0.44	
		Salinity = 20 g/kg							
7.0	291	200	137	96	64	44	31	21	
7.2	183	125	87	60	42	29	20	14	
7.4	116	79	54	37	27	18	12	8.7	
7.6	73	50	35	23	17	11	7.9	5.6	
7.8	46	31	23	15	11	7.5	5.2	3.5	
8.0	29	20	14	9.8	6.7	4.8	3.3	2.3	
8.2	19	13	8.9	6.2	4.4	3.1	2.1	1.6	
8.4	12	8.1	5.6	4.0	2.9	2.0	1.5	1.1	
8.6	7.5	5.2	3.7	2.7	1.9	1.4	1.0	0.77	
8.8	4.8	3.3	2.5	1.7	1.3	0.94	0.73	0.56	
9.0	3.1	2.3	1.6	1.2	0.87	0.69	0.54	0.44	
		Salinity = 30 g/kg							
7.0	312	208	148	102	71	48	33	23	
7.2	196	135	94	64	44	31	21	15	
7.4	125	85	58	40	27	19	13	9.4	
7.6	79	54	37	25	21	12	8.5	6.0	
7.8	50	33	23	16	11	7.9	5.4	3.7	
8.0	31	21	15	10	7.3	5.0	3.5	2.5	
8.2	20	14	9.6	6.7	4.6	3.3	2.3	1.7	
8.4	12.7	8.7	6.0	4.2	2.9	2.1	1.6	1.1	
8.6	8.1	5.6	4.0	2.7	2.0	1.4	1.1	0.81	
8.8	5.2	3.5	2.5	1.8	1.3	1.0	0.75	0.58	
9.0	3.3	2.3	1.7	1.2	0.94	0.71	0.56	0.46	

Table 3 continued

B. Saltwater:

2. Chronic Water Quality Criteria for Saltwater Aquatic Life Based on Total Ammonia (mg/l).
(To convert these values to mg/liter N, multiply by 0.822).

Temperature (°C)								
	0	5	10	15	20	25	30	35
pH	Salinity = 10 g/kg							
7.0	41	29	20	14	9.4	6.6	4.4	3.1
7.2	26	18	12	8.7	5.9	4.1	2.8	2.0
7.4	17	12	7.8	5.3	3.7	2.6	1.8	1.2
7.6	10	7.2	5.0	3.4	2.4	1.7	1.2	0.84
7.8	6.6	4.7	3.1	2.2	1.5	1.1	0.75	0.53
8.0	4.1	2.9	2.0	1.40	0.97	0.69	0.47	0.34
8.2	2.7	1.8	1.3	0.87	0.62	0.44	0.31	0.23
8.4	1.7	1.2	0.81	0.56	0.41	0.29	0.21	0.16
8.6	1.1	0.75	0.53	0.37	0.27	0.20	0.15	0.11
8.8	0.69	0.50	0.34	0.25	0.18	0.14	0.11	0.08
9.0	0.44	0.31	0.23	0.17	0.13	0.10	0.08	0.07
	Salinity = 20 g/kg							
7.0	44	30	21	14	9.7	6.6	4.7	3.1
7.2	27	19	13	9.0	6.2	4.4	3.0	2.1
7.4	18	12	8.1	5.6	4.1	2.7	1.9	1.3
7.6	11	7.5	5.3	3.4	2.5	1.7	1.2	0.84
7.8	6.9	4.7	3.4	2.3	1.6	1.1	0.78	0.53
8.0	4.4	3.0	2.1	1.5	1.0	0.72	0.50	0.34
8.2	2.8	1.9	1.3	0.94	0.66	0.47	0.31	0.24
8.4	1.8	1.2	0.84	0.59	0.44	0.30	0.22	0.16
8.6	1.1	0.78	0.56	0.41	0.28	0.20	0.15	0.12
8.8	0.72	0.50	0.37	0.26	0.19	0.14	0.11	0.08
9.0	0.47	0.34	0.24	0.18	0.13	0.10	0.08	0.07
	Salinity = 30 g/kg							
7.0	47	31	22	15	11	7.2	5.0	3.4
7.2	29	20	14	9.7	6.6	4.7	3.1	2.2
7.4	19	13	8.7	5.9	4.1	2.9	2.0	1.4
7.6	12	8.1	5.6	3.7	3.1	1.8	1.3	0.90
7.8	7.5	5.0	3.4	2.4	1.7	1.2	0.81	0.56
8.0	4.7	3.1	2.2	1.6	1.1	0.75	0.53	0.37
8.2	3.0	2.1	1.4	1.0	0.69	0.50	0.34	0.25
8.4	1.9	1.3	0.90	0.62	0.44	0.31	0.23	0.17
8.6	1.2	0.84	0.59	0.41	0.30	0.22	0.16	0.12
8.8	0.78	0.53	0.37	0.27	0.20	0.15	0.11	0.09
9.0	0.50	0.34	0.26	0.19	0.14	0.11	0.08	0.07

Table 4. Freshwater Water Effect Ratios and Site Specific Criteria Equations

Parameter	<u>Acute</u>			<u>Chronic</u>
	$WER \times e^{(m_a [\ln \text{Hardness}] + b_a)}$			(Acute Site Specific x 2) ÷ National Acute:Chronic Ratio
	WER [@]	m _a =	b _a =	National Acute:Chronic Ratio
Cadmium	2.2	1.128	-3.828	--
Copper	4.77	0.9422	-1.464	2.823
Lead	0.19	1.273	-1.46	51.29
Silver	2.85	1.72	-6.52	--
Zinc	1.63	0.8473	0.8604	2.208

[@] WER = Water Effect Ratio

-- = no recommended value, use chronic value as calculated in Table 2.

- NOTE: 1). Resulting acute and chronic site specific criteria are as total recoverable metals. The conversion factors noted in Tables 1 and 2 cannot be applied to site specific criteria.
- 2). These WERs and resulting site specific criteria apply only to the segments of the Pawtuxet River classified as B1 (see Appendix A).

Table 5. 126 Priority Pollutants

The following comprise the list of toxic pollutants designated pursuant to Section 307(a)(1) of the Act

1. acenaphthene
2. acrolein
3. acrylonitrile
4. benzene
5. benzidine
6. carbon tetrachloride (tetrachloromethane)

Chlorinated Benzenes

7. chlorobenzene
8. 1,2,4-trichlorobenzene
9. hexachlorobenzene

Chlorinated Ethanes

10. 1,2-dichloroethane
11. 1,1,1-trichloroethane
12. hexachloroethane
13. 1,1-dichloroethane
14. 1,1,2-trichloroethane
15. 1,1,2,2-tetrachloroethane
16. chloroethane

Chloroalkyl Ethers

17. bis(2-chloroethyl) ether
18. 2-chloroethyl vinyl ether

Chlorinated Napthalene

19. 2-chloronapthalene

Chlorinated Phenols

20. 2,4,6-trichlorophenol
21. 4-chloro-3-methylphenol
22. chloroform (trichloromethane)
23. 2-chlorophenol

Dichlorobenzenes

24. 1,2-dichlorobenzene
25. 1,3-dichlorobenzene
26. 1,4-dichlorobenzene

Dichlorobenzidine

27. 3,3-dichlorobenzidine

Dichloroethylenes

28. 1,1-dichloroethylene
29. 1,2-trans-dichloroethylene
30. 2,4-dichlorophenol

Table 5. 126 Priority Pollutants, cont.

Dichloropropane and Dichloropropene

- 31. 1,2-dichloropropane
- 32. 1,3-dichloropropene (cis and trans isomers)

- 33. 2,4-dimethylphenol

Dinitrotoluene

- 34. 2,4-dinitrotoluene
- 35. 2,6-dinitrotoluene

- 36. 1,2-diphenylhydrazine
- 37. ethylbenzene
- 38. fluoranthene

Haloethers

- 39. 4-chlorophenyl phenyl ether
- 40. 4-bromophenyl phenyl ether
- 41. bis(2-chloroisopropyl) ether
- 42. bis(2-chlorethoxy) methane

Halomethanes

- 43. methylene chloride (dichloromethane)
- 44. methyl chloride (chloromethane)
- 45. methyl bromide (bromomethane)
- 46. bromoform (tribromomethane)
- 47. dichlorobromomethane
- 48. chlorodibromomethane

- 49. hexachlorobutadiene
- 50. hexachlorocyclopentadiene
- 51. isophorone
- 52. naphthalene
- 53. nitrobenzene

Nitrophenols

- 54. 2-nitrophenol
- 55. 4-nitrophenol
- 56. 2,4-dinitrophenol

- 57. 4,6-dinitro-2-methylphenol

Nitrosamines

- 58. N-nitrosodimethylamine
- 59. N-nitrosodiphenylamine
- 60. N-nitrosodi-n-propylamine

- 61. pentachlorophenol
- 62. phenol

Table 5. 126 Priority Pollutants, cont.

Phthalate Esters

- 63. bis-(2-ethylhexyl) phthalate
- 64. butyl benzyl phthalate
- 65. di-n-butyl phthalate
- 66. di-n-octyl phthalate
- 67. diethyl phthalate
- 68. dimethyl phthalate

Polynuclear Aromatic Hydrocarbons

- 69. benzo(a)anthracene (1,2-benzanthracene)
- 70. benzo(a)pyrene (3,4-benzopyrene)
- 71. 3,4-benzofluoranthene
- 72. benzo(k)fluorathene (11,12-benzofluoranthene)
- 73. chrysene
- 74. acenaphthylene
- 75. anthracene
- 76. benzo(ghi)perylene (1,12-benzoperylene)
- 77. fluorene
- 78. phenanthrene
- 79. dibenzo(ah)anthracene (1,2,5,6-dibenzanthracene)
- 80. indeno (1,2,3-cd) pyrene (2,3-o-phenylenepyrene)
- 81. pyrene

- 82. tetrachloroethylene
- 83. toluene
- 84. trichloroethylene
- 85. vinyl chloride (chloroethylene)

Pesticides and Metabolites

- 86. aldrin
- 87. dieldrin
- 88. chlordane (technical mixture and metabolites)

DDT and Metabolites

- 89. 4,4' -DDT
- 90. 4,4' -DDE (p,p' -DDE)
- 91. 4,4' -DDD (p,p' -TDE)

Endosulfan and Metabolites

- 92. a-endosulfan-Alpha
- 93. b-endosulfan-Beta
- 94. endosulfan sulfate

Endrin and Metabolites

- 95. endrin
- 96. endrin aldehyde

Heptachlor and Metabolites

- 97. heptachlor
- 98. heptachlor epoxide

Table 5. 126 Priority Pollutants, cont.

Hexachlorocyclohexane

- 99. a-BHC-Alpha
- 100. b-BHC-Beta
- 101. g-BHC (lindane) Gamma
- 102. d-BHC-Delta

Polychlorinated Biphenyls (PCBs)

- 103. PCB-1242 (Arochlor 1242)
- 104. PCB-1254 (Arochlor 1254)
- 105. PCB-1221 (Arochlor 1221)
- 106. PCB-1232 (Arochlor 1232)
- 107. PCB-1248 (Arochlor 1248)
- 108. PCB-1260 (Arochlor 1260)
- 109. PCB-1016 (Arochlor 1016)
- 110. toxaphene

Metals, Asbestos and Cyanide

- 111. antimony and compounds
- 112. arsenic and compounds
- 113. asbestos
- 114. beryllium and compounds
- 115. cadmium and compounds
- 116. chromium and compounds
- 117. copper and compounds
- 118. cyanides
- 119. lead and compounds
- 120. mercury and compounds
- 121. nickel and compounds
- 122. selenium and compounds
- 123. silver and compounds
- 124. thallium and compounds
- 125. zinc and compounds
- 126. 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)

RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
WATER RESOURCES

APPENDIX C

POLICY ON THE IMPLEMENTATION OF THE ANTIDegradation

PROVISIONS OF THE

RHODE ISLAND WATER QUALITY REGULATIONS

AUGUST 6, 1997

WATER QUALITY REGULATIONS

APPENDIX C

I. Introduction - Antidegradation Standard

Rule 18 of the Rhode Island Water Quality Regulations is based on the Federal Antidegradation Policy requirements (40 CFR 131.12) and adopted under the authority of Chapter 46-12, 42-17.1 and 42-35 of the General Laws of Rhode Island, as amended. Antidegradation is one of the minimum elements required in State Water Quality Standards. The provisions of the State Antidegradation Regulations have as their objective the maintenance and protection of various levels of water quality and uses. The Rhode Island Antidegradation provisions consist of four (4) tiers of water quality protection which are defined in general terms below and in more specific terms in subsequent sections of this policy:

Tier 1 - Protection of Existing Uses - In all surface waters, existing uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.

Tier 2 - Protection of Water Quality in High Quality Waters - In waters where the existing water quality exceeds levels necessary to support propagation of fish and wildlife, and recreation in and on the water, that quality shall be maintained and protected, except for insignificant changes in water quality as determined by the Director and in accordance with this Antidegradation Implementation Policy, as amended. In addition, the Director may allow significant degradation which is determined to be necessary to achieve important economic or social benefits to the State, in accordance with this Antidegradation Implementation Policy, as amended.

Tier 2½ - Protection of Water Quality for SRPWs - Where high quality waters constitute a SRPW, there shall be no measurable degradation of the existing water quality necessary to protect the characteristic(s) which cause the waterbody to be designated as an SRPW. Notwithstanding that all public drinking water supplies are SRPWs, public drinking water suppliers may undertake temporary and short term activities within the boundary perimeter of a public drinking water supply impoundment for essential maintenance or to address emergency conditions in order to prevent adverse effects on public health or safety, provided that these activities comply with the requirements set forth in Rule 18.B. (Tier 1 Protection of Existing Uses) and Rule 18.C. (Tier 2 Protection of Water Quality in High Quality Waters).

Tier 3 - Protection of Water Quality for ONRWs - Where high quality waters constitute an Outstanding National Resource, that water quality shall be maintained and protected. The State may allow some limited activities that result in temporary and short-term changes in the water quality of an ONRW. Such activities must not permanently degrade water quality or result in water quality lower than that necessary to protect the existing uses in the ONRW.

II. Applicability

Antidegradation applies to all new or increased projects or activities which may lower water quality or affect existing water uses, including but not limited to all 401 Water Quality Certification reviews and any new, reissued, or modified RIPDES permits. This Antidegradation Implementation Policy describes the general strategy the State will use to determine on a case-by-case basis whether, and to what extent, water quality may be lowered.

III. Definitions

"Assimilative Capacity" means the amount of a pollutant or pollutants that can safely be released to a waterbody or segment of a waterbody under the most adverse conditions, as defined in Rule 8.E. of the Water Quality Regulations, which will not cause any violations of applicable water quality criteria nor cause measurable harm or alteration to the natural biological community found therein.

"Background" means the water quality upstream of all point and nonpoint sources of pollution.

"Best Management Practices (BMPs)" means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of and impacts upon waters of the State. BMPs also include treatment requirements, operating procedures, and practices to control site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

"Best Professional Judgement (BPJ)" means a determination, based on best engineering and/or scientific practices and best management practices, involving any pollutant, combination of pollutants or practice(s), on a case-by-case basis, which is determined by the Director to be necessary to carry out the provisions of the Clean Water Act and any applicable chapters of the General laws of Rhode Island. BPJ can be used to set Best Available Technology Economically Achievable, Best Conventional Pollutant Control Technology, Best Practicable Control Currently Available or BMP limitations pursuant to the Clean Water Act either in the absence of an applicable promulgated effluent guideline or where promulgated effluent limitation guidelines only apply to certain aspects of the discharge's operation or to certain pollutants.

"Designated Uses" are those uses specified in water quality standards for each waterbody or segment whether or not they are being attained. In no case shall assimilation or transport of pollutants be considered a designated use.

"Existing use" means those designated uses and any other uses that do not impair the designated uses and that are actually attained in a waterbody on or after November 28, 1975; except that in no case shall assimilation or transport of pollutants be considered an existing use.

"High Quality Waters" include all Class A and SA surface waters as well as other surface waters whose quality exceeds the minimum water quality criteria for any State aquatic life and/or human health criteria or water quality standards assigned to them; or whose qualities and characteristics make them critical to the propagation or survival of important living natural resources; or those waters constituting a Special Resource Protection Water or an Outstanding National Resource Water.

"Outstanding National Resource Waters (ONRWs)" are surface waters of National and State Parks, Wildlife Refuges, and other such waters designated as having special recreational or ecological value.

"Public Drinking Water Supplier" means any city, town, district, or other municipal, public, private corporation or company, or non-profit entity authorized to engage in the collection and treatment of surface water for the purposes of distribution of drinking water in Rhode Island and whose source of drinking water is a surface water in Rhode Island.

"Public Drinking Water Supply" means the source of surface water for a public drinking water supplier.

"Special Resource Protection Waters (SRPW)" are surface waters identified by the Director as having significant recreational or ecological uses, and may include but are not limited to: wildlife refuge or management areas; public drinking water supplies; State and Federal parks; State and Federal designated Estuarine Sanctuary Areas; waterbodies containing critical habitats, including but not limited to waterbodies identified by the RIDEM Natural Heritage Program as critical habitat for rare or endangered species; wetland types or specific wetlands listed as rare, threatened, endangered, of special interest or of special concern by the Rhode Island Natural Heritage Program; waterbodies identified by the U. S. Department of the Interior on the Final List of Rivers for potential inclusion in the National Wild and Scenic Rivers System.

"Water Quality Criteria" means elements of the State water quality standards, expressed as constituent concentrations, levels, or narrative statements, representing a quality of water that supports a particular use.

"Water Quality Standard" means provisions of State or Federal law which consists of a designated use(s) and water quality criteria for the waters of the State. Water quality standards also consist of an antidegradation policy.

IV. Preconditions for Implementation of Antidegradation Procedures

- A. At the onset of the antidegradation review, a determination by the State, of whether the proposed activity can be considered a new or increased activity, must be made.
 - 1. A new activity in terms of application of this Antidegradation Implementation Policy shall refer to any activity which commenced after November 28, 1975.
 - 2. An increased activity shall refer to:
 - (a) a proposed increase in loadings to a waterbody. For discharges covered by existing RIPDES permits an evaluation of an increased loading shall constitute a comparison of the present permit limit with the newly calculated permit limit. If the new permit limit is less than or equal to the old limit, it would not be considered an increased activity. If the comparison indicates that the new permit limit is greater than the old limit, it would be considered an increased activity.
 - (b) an increase in a flow alteration over the existing use.

If the above evaluations result in a determination that the proposed activity is not a new or increased activity, then there would be no further review of the proposed activity under the Antidegradation Implementation Policy. If the above evaluations result in a determination that the proposed activity is a new or increased activity, then the activity will be reviewed for consistency with this Antidegradation Implementation Policy.

V. Tier 1 - Protection of Existing Uses

A. General

This provision applies to all surface waters. An existing use can be established by demonstrating that a use(s) has actually occurred since November 28, 1975, and the water quality is suitable to allow the existing use or by demonstrating that although a designated use(s) has not occurred the water quality is suitable to allow such a use(s) to occur, unless there are physical problems which prevent the use and which cannot be remedied. Under Tier 1, a proposed activity or discharge cannot partially or completely eliminate any existing uses nor the water quality needed to maintain and protect those uses. In addition, the proposed activity cannot violate the class-specific criteria for minimum water quality of the assigned water quality standard of a waterbody. The more stringent of instream aquatic life criteria or applicable human health criteria for toxic pollutants must be met in all waters, regardless of the classification. The Department may make requests for evidence/data for applications of proposed activities or discharges in accordance with Section VI.B.3. of this policy.

VI. Tier 2 - Protection of Water Quality in High Quality Waters

A. General

In a waterbody where, for any parameter, the existing water quality exceeds that level necessary to support the propagation of fish and wildlife and recreation in and on the waters, regardless of the use designation, that water shall be considered high quality for that parameter. All parameters do not need to be better quality than the ambient criteria for the water to be deemed a "high quality water". Instead, a waterbody is assessed as being high quality on a parameter-by-parameter basis.

That high quality shall be maintained and protected, except for insignificant changes in water quality as determined by the Director and in accordance with this Antidegradation Implementation Policy, as amended (See Section VI.B. below). Significant changes in water quality may be allowed if it can be proven to the Director by a preponderance of clear and scientifically valid evidence having a probative value, and the Director finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the RI Continuing Planning Process, that allowing the water quality degradation is necessary to accommodate important economic and social benefit in the area in which the receiving waters are located (See Section VI.C below). In allowing a change in water quality, significant or insignificant, all reasonable measures to minimize the change shall be implemented.

In allowing any such significant change in water quality, the Director shall assure water quality adequate to fully protect existing and designated uses. Adequate scientifically valid documentation shall demonstrate that existing and designated uses, water quality to protect those uses, and all applicable water quality standards, will be fully protected. Further, achievement of the highest statutory and regulatory requirements for all new and existing point sources and all cost effective and reasonable best management practices for nonpoint source controls, shall be assured.

If the waterbody is a Special Resource Protection Water (SRPW), a special subset of High Quality Waters, additional requirements appear in Tier 2½ of this Antidegradation Policy.

If the waterbody is an Outstanding National Resource Water (ONRW), a special subset of High Quality Waters, additional requirements appear in Tier 3 of this Antidegradation Policy.

B. Assessment of protection of high quality waters consists of the following processes:

1. Assess waterbody for high quality on a parameter-by-parameter basis: This step involves characterizing the existing instream water quality and comparing that to the State's instream water quality criteria to assess for high quality water on a parameter-by-parameter basis.

Instream water quality is characterized by the applicable flows associated with the most adverse conditions as stated in Rule 8.E. of these Regulations, background water quality levels (as determined by the Director), and all point source loadings and nonpoint source contributions and in accordance with Rule 10.B. of these Regulations.

If this analysis indicates that the water is not high quality, then Tier 1 of the policy is the applicable level of protection.

If this analysis indicates that the water is high quality, then continue with the Tier 2 antidegradation evaluation.

2. Define the remaining assimilative capacity of the receiving water: The remaining assimilative capacity or buffer of the receiving water is equivalent to the difference between the State's instream water quality criteria and the existing instream water quality.
3. Request and obtain evidence/data for applications involving activities potentially impacting High Quality Waters: If it is determined that a high quality water is involved in a request for an approval of a discharge or other activity, and sufficient supplemental data is not available, RIDEM may request that the applicant provide, at a minimum, the following information prepared by a qualified professional. All engineering analyses and documentation must be prepared, stamped, and signed by a professional engineer registered in the State pursuant to Chapter 5-8 of the of the General Laws of Rhode Island of 1956, as amended. All biological and scientific analyses and documentation shall be prepared by individuals qualified in the scientific field.
 - a. Adequate recent instream water quality data, and engineering analyses to calculate probable water quality impacts due to the discharge or activity, and evidence that the existing instream water uses, and the level of water quality necessary to protect those uses will be maintained and protected.
 - b. Adequate scientific/engineering-based evidence describing the magnitude and duration of any lowering of water quality due to the discharge or activity by itself, and in combination with other discharges or activities presently occurring. Such evidence must also show that all water quality criteria applicable to the High Quality Water in question will not be violated.
 - c. All documentation required by any other applicable RI Water Quality Regulation or which the Director determines is necessary.

Where RIDEM determines that the information/documentation provided by the applicant is insufficient to make a valid determination, the Department has the authority to require additional information from the applicant before a decision is made. Failure to provide the required information shall result in denial of all approvals for the activity or discharge.

4. Determine if the discharge or activity will significantly impact the waterbody: For any water quality parameter, increments of water quality within any High Quality Water which exceed the minimum water quality criteria of that water's assigned water quality standard, constitute an important public resource to the State. Degradation of such increments by the applicant shall only be allowed if the extent of degradation expected can be adequately documented, and it can be demonstrated by the applicant through full intergovernmental coordination and public participation process that the discharge or activity is necessary to achieve important economic or social benefit to the State, as required in VI.A above.

Theoretically, any new or increased discharge or activity could lower existing water quality and thus require the important benefit demonstration. However, RIDEM will: 1) evaluate applications on a case-by-case basis, using BPJ and all pertinent and available facts, including scientific and technical data and calculations as provided by the applicant; and 2) determine whether the incremental loss is significant enough to require the important benefits demonstration described below. Some of the considerations which will be made to determine if an impact is significant in each site specific decision are: 1) percent change in water quality parameter value and their temporal distribution; 2) quality and value of the resource; 3) cumulative impact of discharges and activities on water quality to-date; 4) measurability of the change; 5) visibility of the change; 6) impact on fish and wildlife habitat; and 7) impact on potential and existing uses.

As a general guide, any discharge or activity which consumes greater than 20% of the remaining assimilative capacity (See Section VI.B.2) will be considered a significant impact and will be required to demonstrate important economic or social benefits to justify the activity (See Section VI.C. below). However, on a case-by-case basis, any proposed percent consumption of the remaining assimilative capacity may be deemed significant and invoke full requirements to demonstrate important economic or social benefits. (For example, Class A waters allow a maximum level of 5 mg/l of parameter X at any time. If a High Quality Water has an actual maximum level of 4 mg/l of parameter X, there is an assimilative capacity of 1 mg/l of parameter X. Following the above guidance, any activity which is projected to increase the level of parameter X by greater than 20% of this 1 mg/l assimilative capacity (= 0.2 mg/l) under the most adverse conditions, must go through the demonstration of important economic or social benefit.)

- C. Demonstration that the discharge or activity is necessary to achieve important economic or social benefits to the State:

When the Department determines from BPJ and documentation provided by the applicant that a proposed new or increased discharge or activity would result in a significant impact to the existing water quality of a High Quality waterbody, the Department requires that the applicant demonstrate by a preponderance of clear and scientifically valid evidence having a probative value that the discharge or activity is necessary to achieve important economic or social benefits to the State. The applicant shall submit evidence to the Department, including but not limited to:

1. Adequate scientific and technical evidence describing the magnitude and duration of the lowering of water quality.
2. Adequate evidence detailing the extent of the important economic or social benefits that will accrue to the State from the proposed activity.
3. Adequate scientific and technical evidence which demonstrates that the discharge or activity is necessary and methods of alternative production, alternative methods of treatment, or alternative sites for the activity will not achieve the important social or economic benefits.

Where RIDEM determines that the information/documentation provided by the applicant is insufficient to make a valid determination, the Department has authority to require additional information from the applicant before a decision is made.

Upon receipt and review of the applicant's antidegradation socioeconomic benefits demonstration, the Department may either determine that the significant change in water quality is not necessary to provide important economic or social benefit and deny the proposed new or increased discharge, or tentatively accept the demonstration and provide the opportunity for public comment on the action that may lower water quality in a high quality waterbody. The public participation requirement will be met by providing the public with the opportunity to comment and the opportunity to request a public hearing (See Section VI.D. below).

D. Public Participation:

When the Department determines that a proposed new or increased discharge or activity would result in either significant or insignificant impacts to the existing water quality of any High Quality waterbody, the Department will cause and approve public notice to be given by the applicant, in accordance with Rhode Island General Laws 42-35, and said notice shall include: 1) description of the proposed activity; 2) statement of the State's antidegradation policy and how the activity complies with the State's policy; 3) a determination that existing uses will be maintained and protected; 4) summary of the expected water quality impact; 5) summary of the important economic or social benefits to the State. The notice shall invite written comments to be submitted to DEM, Water Resources, and shall provide an opportunity to request a public hearing. For RIPDES permit related activities, this public notice may be a part of the normal public participation procedures involved with the issuance of a RIPDES permit. Intergovernmental coordination and review will be fulfilled by submitting a copy of the public notice to the following agencies, requesting comment to be submitted to DEM, Water Resources by the public comment deadline.

State Agencies

RIDEM - Fish and Wildlife; Environmental Coordination; Groundwater and ISDS; Freshwater Wetlands; Water Supply Management; Natural Heritage Program.

Governor's Policy Planning Office; RI Division of Statewide Planning, Department of Administration; RI Water Resources Board; RI Department of Economic Development; RI Office of Drinking Water Quality, Department of Health; RI Coastal Resources Management Council (if applicable).

Federal Agencies

US EPA Region I; US Army Corps of Engineers; US Fish and Wildlife Service; National Marine Fisheries Service; National Park Service.

Once all public comment has been received (following the comment deadline), the Director of RIDEM or the Director's designee will respond to all significant comments. If significant evidence of need in terms of public interest, significant new technical information, or significant and valid disagreement as to technical conclusions exist, the Director or the Director's designee will hold a public hearing.

Following this public participation process, the Director or the Director's designee will render a decision as to the allowance or denial for such activity to take place. If the application is denied, the applicant may revise the submittal to decrease or eliminate the projected impact to High Quality Waters, and resubmit the application for consideration under the full review process.

VII. Tier 2½ - Protection of Water Quality for SRPWs

Special Resource Protection Waters (SRPWs) are a special subset of High Quality Waters. SRPWs are subject not only to Tier 2 protection but also special protection under Tier 2½ of the Antidegradation Policy. Waterbodies which have been designated as SRPWs are listed in Appendix D of the Water Quality Regulations.

Under Tier 2½, there shall be no measurable degradation of the existing water quality necessary to protect the characteristic(s) which cause the waterbody to be designated as a SRPW. The new or increased discharge or activity will not be allowed unless the applicant can provide adequate scientific and technical documentation and engineering plans which can prove, to the satisfaction of the Director, that specific pollution controls and/or other mitigation measures and BMPs will completely eliminate any measurable impacts to water quality necessary to protect the characteristics which cause the waterbody to be designated a SRPW. If the RIDEM, using BPJ and scientific and technical knowledge of proper modern pollution control engineering practices, agrees that the specified pollution controls and/or BMPs will protect the SRPW from all measurable degradation, those agreed-to measures will be conditions required of the applicant in an approval. Any avoidance of such conditions by the applicant will result in automatic revocation of the approval and potential enforcement action. The burden of proof rests on the applicant. Notwithstanding that all public drinking water supplies are SRPWs, public drinking water suppliers may undertake temporary and short term activities within the boundary perimeter of a public drinking water supply impoundment for essential maintenance or to address emergency conditions in order to prevent adverse effects on public health or safety, provided that these activities comply with the requirements set forth in Rule 18.B. (Tier 1 Protection of Existing Uses) and Rule 18.C. (Tier 2 Protection of Water Quality in High Quality Waters).

VIII. Tier 3 - Protection of Water Quality for ONRWs

Outstanding National Resource Waters (ONRWs) are a special subset of High Quality Waters. ONRWs are subject not only to Tier 2 protection but also special protection under Tier 3 of the Antidegradation Policy.

Under Tier 3, the State cannot allow any degradation of the existing water quality necessary to protect and maintain ONRWs. There shall be no new or increased discharge to ONRWs or to tributaries to ONRWs that would result in lower water quality in the ONRW. However, the State may allow some limited activities that result in temporary and short-term changes in the water quality of an ONRW. Such activities must not permanently degrade water quality or result in water quality lower than that necessary to protect the existing uses in the ONRW. During any period of time when, after opportunity for public participation in the decision, the State allows temporary degradation, all practical means of minimizing such degradation shall be implemented.

RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
WATER RESOURCES

APPENDIX D

SPECIAL RESOURCE PROTECTION WATERS (SRPWs)

AUGUST 6, 1997

WATER QUALITY REGULATIONS

APPENDIX D

Special Resource Protection Waters are high quality surface waters identified by the Director as having significant ecological or recreational uses, which may include but is not limited to: wildlife refuge or management areas; public drinking water supplies; State and Federal parks; State and Federal designated Estuarine Sanctuary Areas; waterbodies containing critical habitats, which may include but is not limited to waterbodies identified by the RIDEM Natural Heritage Program as critical habitat for rare or endangered species; wetland types or specific wetlands listed as rare, threatened, endangered, of special interest or of special concern by the RI Natural Heritage Program; waterbodies identified by the U.S. Department of the Interior on the Final List of Rivers for potential inclusion in the National Wild and Scenic Rivers System.

The following list contains surface waters of the State which have been designated by the Department as SRPWs. Utilizing criteria set forth in the Rhode Island Water Quality Regulations and information garnered from the review and analyses of recommendations and documents by federal and state agencies and private non-profit organizations, RIDEM objectively established a list of SRPWs. This list of designated SRPWs includes the waterbody name, location and water quality classification for each SRPW. Additional information on SRPWs is available from RIDEM, Water Resources and the RIDEM Natural Heritage Program.

Under Tier 2½ of the Antidegradation Provisions, Protection of Water Quality for SRPWs, the State cannot allow any measurable degradation of the existing water quality necessary to protect the characteristic(s) which cause the waterbody to be designated a SRPW. The new or increased discharge or activity will not be allowed unless the applicant can provide adequate scientific and technical documentation and engineering plans which can prove, to the satisfaction of the Director, that specific pollution controls and/or other mitigation measures and BMPs will completely eliminate any measurable impacts to water quality necessary to protect the characteristics which cause the waterbody to be designated a SRPW. If the RIDEM, using Best Professional Judgement and scientific and technical knowledge of proper modern pollution control engineering practices, agrees that the specified pollution controls and/or BMPs will protect the SRPW from all measurable degradation, those agreed-to measures will be conditions required of the applicant in an approval. Any avoidance of such conditions by the applicant will result in automatic revocation of the approval and potential enforcement action. The burden of proof rests on the applicant. Notwithstanding that all public drinking water supplies are SRPWs, public drinking water suppliers may undertake temporary and short term activities within the boundary perimeter of a public drinking water supply impoundment for essential maintenance or to address emergency conditions in order to prevent adverse effects on public health or safety, provided that these activities comply with the requirements set forth in Rule 18.B. (Tier 1 Protection of Existing Uses) and Rule 18.C. (Tier 2 Protection of Water Quality in High Quality Waters).

RIDEM SPECIAL RESOURCE PROTECTION WATERS

WBID #	WATERBODY	LOCATION	WB CLASS
RI0001006	Abbott Run Brook	Cumberland	A
RI0001006	Ash Swamp	Cumberland	A
RI0001006	Ash Swamp Brook	Cumberland	A
RI0008040L04	Asheville Pond	Hopkinton	B
RI0007035	Bailey Brook	Middletown	A
RI0006015L06	Barden Reservoir	Scituate	A
RI0007021	Barrington River Estuary	Barrington, E.P.	SA
RI0005010L01	Beach Pond	Exeter	B
RI0007027L02	Belleville Pond	N. Kingstown	B
RI0006012	Big River	West Greenwich	A
RI0008040L03	Blue Pond	Hopkinton	B
RI0005047L03	Bowdish Reservoir	Glocester	B
RI0010048	Briggs Marsh	Little Compton	SA
RI0010031	Brown Point Marsh	Little Compton	SA/A
RI0010043	Cards Pond	S. Kingstown	SA
RI0005047L05	Cedar Swamp Pond	Burrillville	B
RI0008039L01	Chapman Pond/Crandall Swamp	Westerly	B
RI0010048	Cold Brook	Little Compton	A
RI0010048	Cole Spring Brook	Little Compton	A
RI0005047	Croff Farm Brook	Burrillville	B
RI0001004	Crookfall Brook	North Smithfield/Cumberland	A
RI0008039L04	Deep Pond	Charlestown	A
RI0001006L01	Diamond Hill Reservoir	Cumberland	A
RI0008040L	Diamond Pond/Bog Complex	Richmond	A
RI0010031	Donovan Marsh	Little Compton	A
RI0001005	East Sneece Brook	Cumberland	A
RI0008040L05	Ell Pond	Hopkinton	B
RI0010043L	Factory Pond	S. Kingstown	A
RI0010031	Fogland Point Marsh	Tiverton	SA
RI0010043	Fresh Pond	Charlestown	SA
RI0010046L0Z	Fresh Pond	New Shoreham	A
RI0010043	Galilee Bird Sanctuary	Narragansett/S.K.	SA
RI0000035L01	Gardiner Pond	Middletown	A
RI0008039	Genesee Swamp	S. Kingstown	B
RI0007025L01	Gorton Pond	Warwick	B
RI0008040L	Grass Pond	Richmond	A
RI0010046	Great Salt Pond & Marshes	New Shoreham	SA
RI0008039	Great Swamp	S. Kingstown	B
RI0010043	Green Hill Pond	S. Kingstown	SA
RI0001006L03	Happy Hollow Pond	Cumberland	A
RI0007028	Hunt River	N. Kingstown	A
RI0006015	Hunting House Brook	Scituate	A
RI0007036	Jamestown Brook	Jamestown	A
RI0007034L01	Kickemuit Reservoir	Warren	A
RI0007035L06	Lawton Valley Pond	Portsmouth	A
RI0010043	Little Maschaug Pond	Westerly	SA
RI0008038E	Little Narragansett Bay	Westerly	SA
RI0001006	Long Brook	Cumberland	A
RI0008040L20	Long Pond	Hopkinton	B
RI0010048	Long Pond	Little Compton	A
RI0001003	Lonsdale Marshes (Blackstone Complex)	Lincoln, C.F., Cumb.	A
RI0007035	Maidford River	Middletown	A
RI0010043	Maschaug Pond	Westerly	SA

WBID #	WATERBODY	LOCATION	WB CLASS
RI0008039L8-1	Matunuck Hills		
	Complex-Tucker, Long, White	S. Kingstown	A
RI0008039	McGowan Swamp	Westerly	A
RI0008039L05	Meadowbrook Pond	Richmond	A
RI0006014	Mishnock Swamp	Coventry	A
RI0006015L04	Moswansicut Pond	Scituate	A
RI0007035L02	Nelson Pond	Middletown	A
RI0010043	Ninigret Pond	Charlestown	SA
RI0007035L08	Nonquit Pond	Tiverton	A
RI0007035L03	North Easton Pond	Middletown	A
RI0007036L01	North Pond	Jamestown	A
RI0007022	Palmer River	Barrington/Warren	SA
RI0007035	Paradise Brook	Middletown	A
RI0008039	Pawcatuck River	Charlestown, Westerly, S. Kingstown Richmond, Hopkinton	B
RI0001006L02	Pawtucket Reservoir (Arnold Mills Reservoir)	Cumberland	A
RI0010044	Pettaquamscutt River (Narrow River)	N. Kingstown/S. Kingstown/ Narragansett	SA
RI0008040	Phantom Bog	Hopkinton	A
RI0010043	Point Judith Pond	S. Kingstown/Narr.	SA
RI0006015L02	Ponaganset Reservoir	Glocester	A
RI0006015	Ponaganset River	Foster/Glocester	A
RI0010043	Potter Pond	S. Kingstown	SA
RI0008039	Queen River	Exeter, S.K.	B
RI0010048	Quicksand Pond	Little Compton	SA
RI0010043	Quonochontaug Pond	Charlestown/Westerly	SA
RI0006015L01	Regulating Reservoir	Scituate	A
RI0001006L04	Robin Hollow Pond	Cumberland	A
RI0007021	Runnins River	Barrington, E.P.	B
RI0010046L	Sachem Pond	New Shoreham	A
RI0010046L01	Sands Pond	New Shoreham	A
RI0D01031	Sapowet Marsh	Tiverton	SA
RI0008039L17	Schoolhouse Pond	Charlestown	A
RI0006015L06	Scituate Reservoir	Scituate	A
RI0001002	Screech Hole Bog	Burrillville	A
RI0001002	Scwindels Swamp Preserve	Glocester	A
RI0006015L05	Shippee Saw Mill Pond	Foster	A
RI0007035L10	Sisson Pond	Portsmouth	A
RI0001002107	Smith & Sayles Reservoir	Glocester	B
RI0001005L01	Sneech Pond	Cumberland	A
RI0007035104	South Easton Pond	Newport	A
RI0007036L02	South Pond	Jamestown	A
RI0007035L05	St. Marys Pond	Portsmouth	A
RI0007037L01	Stafford Pond	Tiverton	A
RI0010043	Succotash Marsh	S. Kingstown	SA
RI0008040L17	Tippencast Pond	W.G., Exeter	A
RI0010043	Trustom Pond	S. Kingstown	SA
RI0010048	Tunipus Pond	Little Compton	SA
RI0010043	Twin Pond	Narragansett	SA
RI0001003L02	Valley Falls Pond	Cumberland	B
RI0001001L01	Wallum Lake	Burrillville	A
RI0008039L02	Watchaug Pond	Charlestown	B
RI0007035L07	Watson Reservoir	Little Compton	A
RI0007027L	Wesquage Pond	Narragansett	A
RI0006015L03	Westconnaug Reservoir	Scituate, Foster	A

WBID #	WATERBODY	LOCATION	WB CLASS
RI0008040L18	Wickaboxet Pond	W. Greenwich	A
RI0010043	Winnapaug Pond & Salt Marsh	Westerly	SA
RI0008040	Wood River	Richmond, Hopk., West.	B
RI0001004L02	Woonsocket Reservoir #1	North Smithfield	A
RI0001004L01	Woonsocket Reservoir #3	North Smithfield	A
RI0008039L07	Worden Pond	S. Kingstown	B
RI0008040L11	Wyoming Pond	Hope Valley	B
RI0008040L07	Yawgoog Pond	Hopkinton	A

In addition to those listed, all other waters which are of at least a first (1st) order stream size, excluding their wetlands, and are tributary to public drinking water supplies are SRPWs.

RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
WATER RESOURCES

RHODE ISLAND SITE SPECIFIC
AQUATIC LIFE WATER QUALITY CRITERIA
DEVELOPMENT POLICY
AUGUST 6, 1997

Rhode Island Site Specific Aquatic Life Water Quality Criteria Development Policy

Introduction

On November 28, 1980 (45 FR 79318), and February 15, 1984 (49 FR 5831), EPA announced through Federal Register notices, the publication of 65 individual ambient water quality criteria documents for pollutants listed as toxic under section 307(a)(1) of the Clean Water Act. On July 29, 1985 (50 FR 30784), EPA published additional water quality criteria documents. Pursuant to new section 303(c)(2)(B) of the Clean Water Act, the Rhode Island Department of Environmental Management (RIDEM), Water Resources, adopted, as guidelines, the aquatic life criteria for those 307(a)(1) toxic pollutants for which there are National criteria recommendations under Section 304(a) of the Act. The purpose of these guidelines is to use optimally, and consistently, all quality data pertaining to the aquatic toxicity of a pollutant in order to determine a concentration of that pollutant which will be protective of aquatic life and support the designated uses. There is valid scientific rationale for the contention that the National criteria derived using the November 28, 1980 National guidelines (45 FR 79341) may be underprotective or overprotective at specific sites. National water quality criteria are based on laboratory toxicity tests in which aquatic organisms were exposed to known concentration of toxicants in laboratory water and, thus, may not adequately represent site water and effluent effects. The underlying intent of adopting water quality criteria into States standards is to establish a set of conditions which, if consistently achieved, will not impair the biological integrity of the aquatic community residing in the waterbody. A prominent aspect of the National criteria is a provision allowing for modification to reflect local environmental conditions. Incorporating site specific water quality criteria into discharge permits will still ensure that the aquatic community is adequately protected from the effects of toxic pollutant discharges, while considering the mitigation of toxicity due to characteristics of a local waterbody and effluent. The need to reevaluate the National criteria and develop site specific criteria can emerge from many factors including:

- 1) High natural ambient concentrations relative to standards or criteria.
- 2) The presence of substances for which water quality based effluent limits are below analytical detectability.
- 3) The possibility of complex or synergistic interactions of chemicals within the effluent and/or site water.
- 4) Observed beneficial or detrimental effects on the receiving water biota.

RIDEM has assembled an extensive data base on background, or natural, ambient concentration of various toxics (e.g. copper) in groundwater-fed tributaries. An evaluation of this data base in conjunction with instream observations has revealed that the National criteria may be too stringent for several toxic parameters. In an attempt to connect acceptable instream concentrations for a chemical with the physical/chemical and toxic characteristics of a discharge and site water, RIDEM first developed this site specific criteria procedure using a Mostly Sanitary Secondary Treatment Plant's (MSSTP) effluent and designated site water in 1990. Due to the uncertainties associated with the instream fate of pollutant loading after discharge, RIDEM will not allow for unchecked or maximum attenuation of toxicity by various physical/chemical parameters in every effluent. Using a MSSTP effluent will afford a consistent, predictable baseline behavior of specific pollutants when attenuated by standard sanitary, secondary effluent components (TSS, alkalinity, pH etc.) This procedure will allow for a moderate amount of attenuation of toxicity by a discharge and site water while addressing the concern of instream fate of pollutant loadings. However, site specific criteria may also be developed using the procedures outlined in the recently finalized EPA document entitled Interim Guidance on Determination and Use of Water-Effect Ratios for Metals (EPA-823-B-94-001 ("EPA WER Guidance")). Since the EPA WER Guidance procedures allow for the evaluation of more site specific characteristics (which may attenuate toxicity) than the RIDEM policy, a more rigorous testing program may be required when following the EPA WER Guidance than that described herein.

The new criteria developed will be applied only to sites where there are existing discharges and will be

administered uniformly to disallow any significant fluctuations in toxicity that may occur due to inconsistencies in the influent component or overall treatment. Documentation of the factors that exist at a facility or within a basin, which necessitate site specific criteria development, shall be submitted to RIDEM. This documentation shall include any previous effluent or instream bioassay test results and/or evaluation of the impact of the discharge on the resident aquatic community. It is also necessary to characterize existing water quality conditions at the site or within the basin. The parameters for which site specific criteria are to be developed should be listed with an explanation of why the National criteria for these parameters can not be met. An indication of what levels of the parameters of concern could be attained after institution of an aggressive pretreatment program and exploration of other municipal standard treatment controls, should be discussed within this document.

The municipal effluent and site water data generated from this procedure will be applied to industries as a baseline for permit derivation. Furthermore, the criteria developed from one site may be applied to additional sites if it is demonstrated to the satisfaction of the Director that the hydrologic, ecological and physiographic conditions are consistent between the two sites. New permit limits will be developed in accordance with applicable federal and state regulations and laws, including antibacksliding and antidegradation prohibitions. Necessary modifications to all permits will be based on compliance bioassay monitoring results.

Methodology

As explained above, the RIDEM site specific criteria testing protocol narrowly limits the degree to which mitigation of toxicity may be considered. The main advantage of the RIDEM policy is that the criteria may be applicable to a number of discharges and site waters. However, the RIDEM protocol is also expected to result in more stringent criteria compared to the criteria resulting from following the EPA WER Guidance. The remainder of this document describes RIDEM's protocol and describes testing and data analysis. EPA's WER Guidance should be consulted for further information concerning alternative testing and data analysis procedures.

The site specific criteria shall be developed using a Mostly Sanitary Secondary Treatment Plant's (MSSTP, as designated by RIDEM) effluent with site water. This MSSTP will be a standard secondary facility with little or no industrial input. An efficient Wastewater Treatment facility which handles primarily domestic flow will offer the situation of limited buffering of toxicity due to chemicals from industrial inputs and/or domestic organic loadings to the WWTF. Thus, this set of tests will represent a best case scenario which can be applied to almost all facilities in the state. Future routine toxicity test results shall be used to monitor continued compliance and may determine if more stringent or lenient permit limits and/or requirements are needed for all facilities.

Since the rationale for site specific criteria development is also based on potential differences in physical and chemical characteristics of the site water, the concept of a "site" must be consistent with this rationale. Therefore, the site should be defined on the basis of expected changes in the relevant parameters' biological availability and/or toxicity due to physical and chemical variability of the site water. These changes in toxicity cannot result from components present in the effluent of an upstream discharge. A site can be limited to an area affected by a single point source discharge or it can be quite large. Due to the complexity of factors, RIDEM will be responsible for delineating sites. It is postulated that a site and site water will be defined on a basin-wide level.

These bioassay tests shall be conducted in accordance with protocol listed in the Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms, Fourth Edition (or most recent edition), EPA/600/4-85/013 90/027, September 1991; and the USEPA Water Quality Standards Handbook: Second Edition, EPA-823-B-94-005a, August 1994 (or most recent edition), incorporating any deviations from protocol listed herein, or additional methods if approved by the Director. These tests shall consist of acute toxicity testing of 2 species including a fish (freshwater = fathead minnow, Pimephales promelas; marine = silversides, Menidia spp.) and an invertebrate (freshwater = Ceriodaphnia spp.; marine = shrimp, Mysidopsis bahia). Effluent testing shall be conducted on a pre-chlorinated, 24 hour flow proportioned (samples collected hourly), composite effluent sample of the MSSTP. A 100% effluent sample shall be analyzed to determine the concentration(s) of the parameter(s) of concern.

Acute tests shall be run on the MSSTP effluent diluted with a designated site water (MSSTP mixture) at a ratio of 20 site water:1 effluent. The ratio of 20:1 was chosen because it represents 75% of the dilution factors established for discharges in Rhode Island. However, the Director may approve a testing protocol which is based upon the actual ratio of effluent and site water which will result under the receiving water design flow specified in Section 8.E. of the RI Water Quality Regulations. In this case, the site specific criteria will only be applicable to the particular site evaluated.

An acute screening test shall be conducted on the MSSTP mixture sample, by spiking with one toxicant of concern at concentrations high enough to determine a statistically valid LC_{50} , which is <100%, for that toxicant relevant to each species being tested. Then at least five toxicant concentrations, spaced evenly above and below the previously determined LC_{50} , and a control shall be tested. Two replicates per concentration are required and the number of organisms per replicate will depend on the species being tested (see EPA Methods Manual EPA/600/4-90/027, September 1991). In the case of freshwater testing the hardness of the site water must be monitored at the time the tests are conducted to allow for calculations of the criteria based on hardness. Each complete set of tests shall be conducted on three different occasions (dates). Chemical analyses, including hardness, of the site water and MSSTP effluent combined sample will have to be conducted to confirm the concentration of the spiked chemical on selected dilutions during each testing occasion. Selected dilutions shall include low, medium, and high concentrations on one replicate and one species. Chemical analyses of these dilutions shall be conducted on a portion of the sample taken immediately prior to the addition of the organisms. Dissolved metal analyses must be conducted if the results of the toxicity testing will be used to establish site specific criteria for dissolved metals.

In addition, similar tests shall be conducted on a control of laboratory water spiked with the toxicant of concern at concentrations not only equivalent to those observed in the effluent, but also which will allow for a statistical comparison with the National criteria. Using the data from both sets of replicates, the LC_{50} , standard deviation, and 95% confidence intervals shall be obtained for each species tested in the laboratory water, relative to each toxicant of concern, for each of the three testing occasions. The laboratory water LC_{50} test results shall be compared to the National acute LC_{50} values obtained for each testing occasion to confirm the validity of these site specific tests.

Using the data from both sets of replicates, the LC_{50} , standard deviation, and 95% confidence intervals shall be obtained for each species tested in the MSSTP mixture, relative to each toxicant of concern for each of the valid testing occasions. Species-specific water effect ratio shall be calculated for each of the valid testing occasions by dividing the laboratory water LC_{50} into the MSSTP mixture LC_{50} . Two species-specific final WER shall be calculated as the geometric mean of the valid WERs (from each species). These two specific WERs shall be compared to see if they are significantly different ($p \leq 0.05$). If these two species-specific WERs are not different, then the final site specific WER is the geometric mean of these two WERs. If the two species-specific water effect ratios are statistically different, then the WER from the most sensitive species shall be the final site specific WER.

If the final site specific WER is not significantly different from a value of one (1.0), then the National Acute Criteria is the Site Specific acute criteria. If the final site specific WER is significantly different from a value of one (1.0), then the Site Specific Criteria shall be calculated by multiplying the final site specific WER times the National freshwater acute criteria formula or the National saltwater acute criteria, as appropriate. The Director may determine not to use all of the valid testing occasions to calculate the final site specific WER if necessary to protect aquatic life.

If a National acute/chronic ratio was used to develop the National chronic criteria for the chemical of interest, the site specific chronic criteria is calculated by multiplying the site specific acute criteria by 2 and then dividing by the National acute/chronic ratio.

If the National acute/chronic ratio for the toxicant of concern does not exist, a site specific chronic criteria can also be obtained by testing species for chronic toxicity. Tests shall be conducted on two species, including a fish (freshwater = fathead minnow, Pimephales promelas; marine = silversides, Menidia spp.), and an invertebrate

(freshwater = Ceriodaphnia spp.; marine = shrimp, Mysidopsis bahia) using a laboratory water control sample and the MSSTP effluent with site dilution water at a ratio of 1:20. However, the Director may approve a testing protocol which is based upon the actual ratio of effluent and site water which will result under the receiving water design flow specified in Section 8.E. of the RI Water Quality Regulations. In this case the site specific criteria will only be applicable to the particular site evaluated.

The chronic tests shall be conducted in accordance with protocol listed in Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms, May 1988, EPA/600/4-87/028 (or most recent edition), and Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms Second Edition, March 1989, EPA/600/4-87/001 (or most recent edition), incorporating any deviations from protocol listed below.

A chronic screening test shall be conducted on the MSSTP and site dilution water mixture by spiking with one toxicant of concern at concentrations high enough to determine a statistically valid chronic toxic effect value for that toxicant relevant to each species being tested. Then at least five toxicant concentrations, spaced evenly above and below the previously determined chronic toxic effect value, and a control, shall be tested. The number of replicates per concentration and the number of organisms per replicate will depend on the species being tested in accordance with the EPA protocol. For freshwater tests, the hardness of the site water must be monitored at the time the tests are conducted to allow for calculations of the criteria based on hardness. Each complete set of tests shall be conducted on three different occasions (dates). Chemical analyses, including hardness, of the site water and MSSTP effluent combined sample will have to be conducted to confirm the concentration of the spiked chemical on selected dilutions during each testing occasion. Selected dilutions shall include low, medium, and high concentrations on one replicate and one species. Chemical analyses of these dilutions shall be conducted on a portion of the sample taken immediately prior to the addition of the organisms.

Using the data from all sets of replicates, the No Observed Effect Concentration (NOEC), Lowest Observed Effect Concentration (LOEC), and Maximum Acceptable Toxicant Concentration (MATC) for each species tested in the lab water tests, relative to each toxicant of concern, for each of the three testing occasions. The results of the laboratory water test obtained for each testing occasion are compared with the National chronic value to determine the validity of these site specific tests.

Using the data from all sets of replicates, the No Observed Effect Concentration (NOEC), Lowest Observed Effect Concentration (LOEC), and Maximum Acceptable Toxicant Concentration (MATC) shall be obtained for each species tested in the MSSTP effluent, relative to each toxicant of concern for each of the valid testing occasions. Species-specific water effect ratios shall be calculated for each of the valid occasions by dividing the chronic value from the laboratory water test into the chronic value from the MSSTP effluent test. Two species-specific final WERs shall be calculated as the geometric mean of the valid WERs (from each species).

If the two species-specific WERs are not significantly different (confidence limits overlap), then the final site specific WER is the geometric mean of these two WERs. If the two species-specific final WERs are significantly different from each other, then the WER from the most sensitive species shall be the final site specific WER.

If the final site specific WER is not significantly different from a value of one (1.0), then the National chronic criteria equals the site specific chronic criteria. If the final site specific WER is significantly different from a value of one (1.0), the site specific Chronic Criteria can be calculated by multiplying the final site specific WER by the National Freshwater Chronic Criteria Formula or the National Saltwater Chronic Criteria, as appropriate. The Director may determine not to use all of the valid testing occasions to calculate the final site specific WER if necessary to protect aquatic life.

Permit Limits and Requirements

The information obtained from the three testing occasions will be reviewed by RIDEM to determine the Final

Site Specific criteria for each parameter evaluated. If the results from these test procedures do not change the National criteria, the National criteria would apply to all dischargers on the waterbody and would be used to derive permit limits where necessary. Chemical specific limits will be developed for those pollutants which would cause an excursion above the National criteria and will be incorporated into permits on a case-by-case basis. Dischargers would be required to redesign their facility, if necessary, to ensure compliance with the National criteria and permit limits. Bioassay monitoring requirements and whole effluent toxicity (WET) limits may be developed and incorporate into permits, as necessary, based on previous bioassay test results, continual toxicity during compliance monitoring and new data from dilution studies.

If the results from these test procedures justify changing the National criterion to a site specific criterion, these new ambient criteria would apply to all dischargers on within the designated site and would be used to derive permit limits. For freshwaters, the site specific criteria will be established by multiplying the National criteria, determined at the hardness anticipated during the design receiving water flow, by the final water effect ratio(s). These permits may include chemical specific limits and/or whole effluent toxicity limits. Whole effluent toxicity limits and specifics of bioassay monitoring requirements will be based on previous bioassay test results, continual toxicity during compliance monitoring and new data from dilution studies.

If toxicity testing is incorporated into a permit, facilities with 20:1, or less dilution may be required to conduct chronic toxicity tests. Facilities with a 20.1-100:1 dilution may be required to conduct acute tests. Facilities with greater than 100:1 dilution may also be required to conduct acute toxicity tests. WET limits may be developed based on EPA's acute and/or chronic Toxic Units Method although meeting a minimum LC_{50} may be required if best professional judgement deems it is necessary. Toxicity Identification Evaluations (TIE) and Toxicity Reduction Evaluations (TRE) may be required of any discharger if bioassay compliance monitoring indicates continual toxicity. In addition, bioassessment studies may be required to ensure the integrity of the instream aquatic community.